

THE SEDGES (CYPERACEAE) OF BARBADOS

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ABSTRACT. After decades of neglect, the sedge flora of Barbados was re-appraised, beginning with intensive collections made across the island. Twenty-eight species of Cyperaceae from the genera *Abildgaardia*, *Cyperus* (including *Mariscus*), *Eleocharis*, *Fimbristylis*, *Kyllinga*, *Pycreus*, *Rhynchospora*, *Scleria*, and *Torulium* are described and illustrated with photographs. Keys are provided to all of the species, as well. Five species are added to the flora of Barbados. Species previously recorded but not found recently are noted.

Key Words: *Abildgaardia*, Antilles, Barbados, Cyperaceae, *Cyperus*, *Eleocharis*, *Fimbristylis*, flora, *Kyllinga*, *Mariscus*, *Pycreus*, *Rhynchospora*, *Scleria*, sedges, West Indies

Barbados is the easternmost island of the Lesser Antilles in the West Indies, located just north of 13 degrees N lat. and a little west of 59 degrees W long. It is tropical with a pronounced wet season July through November and a pronounced dry season January through April. The average annual rainfall of 1000–2000 mm is distributed unevenly across the landmass. Differing geologically from its neighbors, Barbados is almost entirely coral-derived and dominated by alkaline clays and coral rock with small areas of exposed sandstone. The topography is rolling and sharply tiered in places, with the highest elevation about 340 m. Due to the island's small size (ca. 18 km × 26 km), the entire landmass is "coastal" and exposed to salty winds.

The original flora is virtually gone, and the biota is a mix from various sources reflecting centuries of human activity. Barbados was inhabited by Native Americans before the arrival of Europeans in the early 1600s. For centuries most of the area has been covered with cultivated sugarcane, with pastures dominated by imported grasses, and with disturbed scrubby areas. Only a small number of tiny forest remnants approximate the original vegetation, most notably Turner's Hall Woods in St. Andrew Parish and the Hackleton's Cliff area, including Foster Hall Woods, in St. Joseph and St. John Parishes. Miles of sharp gullies in the limestone house partially wild vegetation, though these places are not rich in sedges.

Throughout Barbados are minor freshwater streams and seeps, well provided with sedges. The island is ringed with beaches interspersed with stretches of rugged, rocky coastline. Behind the beaches are often sandy, scrubby woods, or dunes, or brackish pools. Most notable of these is the Chancery Lane "Swamp" (brackish marsh) on the southeastern coast in Christ Church Parish. Few significant true swamps remain, although there are patches of woody vegetation on wet coastal sites.

Of these, Graeme Hall Swamp on the south coast in Christ Church Parish is a vegetatively diverse mangrove swamp, marsh, and scrubland with the best array of sedges in Barbados. The dominant understory plant is the sedge *Eleocharis mutata*. Scattered throughout much of the swamp, this species covers acres as a nearly monospecific "lawn" on low, wet, marly soil in full sun and in shade. The areas dominated by *E. mutata* were called "Sedge Swamp" association by Gooding (1974). He placed the association in areas of reduced salinity or virtually fresh water behind mangrove swamp. Other members of the Sedge Swamp association occurring in Graeme Hall Swamp are *Abildgaardia ovata*, *Blutaparon vermiculare* (L.) Mears, *E. geniculata*, *Fimbristylis ferruginea*, and *Sporobolus virginicus* (L.) Kunth. Additional sedges found in Graeme Hall Swamp are *Cyperus alopecuroides*, *C. elegans*, *C. ligularis*, *C. planifolius*, *C. rotundus*, *F. cymosa*, *Kyllinga brevifolia*, *Pycreus polystachyos*, *Scleria melaleuca*, and *Torulinium odoratum*. *Cyperus laevigatus* was collected there in the past but has not been encountered recently, even in an intensive floristic inventory of Graeme Hall Swamp carried out in 1996 and 1997 by Rogers and Dr. Sean Carrington of the University of the West Indies. In short, a single small site on the order of 80 acres provides habitat for most of the sedges encountered in Barbados. This is of some significance, since the site is the new home of a sewage treatment plant and is under development as an "ecotourism" attraction.

Sedges in Barbados have been ignored in recent years. The most up-to-date treatments are in the *Flora of the Lesser Antilles* (Koyama 1979) and in the *Flora of Barbados* (Gooding et al. 1965). The *Flora of the Lesser Antilles* is broad in scope, making it especially useful for identifications, overall ranges, and nomenclature. By the same token, the attention to Barbados is minimal, and experience shows the work to be of limited applicability to Barbados. The *Flora of Barbados* treatment is in need of an up-

date. It was written with no field work and was based on a limited number of specimens collected largely in the 1930s and 1940s. Conditions have changed; taxonomic concepts and nomenclature have changed; the sedge flora has changed.

The present work lacks the breadth required to provide many taxonomic insights into taxa with the vast distributions characteristic of most of the sedges treated. Taxonomically and nomenclaturally we have, therefore, tended to conform with Koyama except in cases with clear reasons to diverge. As one such case, we were unable to perceive *Mariscus* as a genus apart from *Cyperus*, and adopted the outlook of other taxonomists in treating *Mariscus* as a synonym. We have diverged further from the *Flora of the Lesser Antilles* by following recent authors in treating *Abildgaardia* as distinct from *Fimbristylis*. Some current authors include *Pycneus* and *Torulium* in *Cyperus*. That we have failed to do so reflects "default" consistency with the *Flora of the Lesser Antilles* rather than taxonomic conviction. We are particularly skeptical of maintaining *Torulium* apart from *Cyperus*.

At the specific level we have likewise avoided the temptation to judge species boundaries by Barbados experience. An exception, however, was a profound inability to perceive *Cyperus brunneus* as distinct from *C. planifolius*, at least as these are portrayed in the literature. We have encountered sedges consistent with descriptions of both and an array of intermediates. Review of the literature and personal communication with others who have faced this pair engenders a sense that *C. brunneus* is best regarded tentatively as a synonym of *C. planifolius*, pending a comprehensive study that includes the types and materials from the full ranges.

A few sedges have been collected on Barbados but did not turn up in our field work. These are:

Cyperus laevigatus is known in Barbados from three collections, two from brackish sites on the East Coast (1937, 1990) and one from Graeme Hall Swamp (1937). We have repeatedly searched along the East Coast (including the 1990 site) and in Graeme Hall Swamp with no results. The most likely area for the species to be rediscovered is near the mouths of streams in the vicinity of Martin's Bay in St. John Parish.

Cyperus sphacelatus was encountered only once in Barbados, by botanist G. Gooding in August of 1940. We have searched the site and its environs on several occasions. The area where

Gooding found *C. sphacelatus* has been altered since the 1940s, and presently is dominated by cattle farming, although the freshwater stream where the sedge presumably grew is still present though polluted with cattle manure. This stream is the site of the newly encountered *C. alopecuroides*. *Eleocharis macrostachya* has been collected just once in the Lesser Antilles, on the East Coast of Barbados in 1904.

Torulinium filiforme was collected once, by S. Carrington in 1989 on the lawn of the Barbados Museum in Bridgetown. We have searched that lawn and the surrounding area without finding this small weedy *Torulinium*.

New sedge records for Barbados turned up by the present work are:

Cyperus alopecuroides has been encountered in three places: one is a stream in St. Philip Parish. The second site is a pond near that stream. The third site is Graeme Hall Swamp. All three places are characterized by standing water and deep, mucky, highly organic, manure-enriched soil smelling of hydrogen sulfide.

Fimbristylis complanata is a pasture (and roadside) weed.

Kyllinga nemoralis is a grassy weed.

Cyperus compressus is known from one locality, a nitrogen-rich weedy lawn adjacent to a stable in Bridgetown.

Cyperus ochraceus has turned up at two spots in Speightstown in St. Peter Parish. One has since been lost to residential development.

MATERIALS AND METHODS

Our general approach has been to search Barbados for sedges, making herbarium collections which we have deposited at BAR and MICH. Most of the field work took place July 1996 to July 1997, with diminished collection activity continuing to March 1998. The determinations were made by us using materials in the herbaria at the University of the West Indies, Barbados (BAR), the University of Florida (FLAS), and the University of Michigan (MICH), by consulting floristic literature, and by consulting other botanists interested in neotropical sedges. Relevant and much-consulted sedge treatments dating from within the last six years are Adams (1992), McVaugh (1993), and Strong (1996). Photo-

graphs were taken with a Pentax 35 mm SLR camera using multiple lenses and ASA 100 black and white film. All species descriptions and keys are based entirely on Barbados material in BAR. The key is intended for users other than professional botanists and thus avoids obscure and microscopic characters. Generic descriptions are based heavily on Koyama (1979) though much influenced by other literature and by herbarium work.

Prior to the 1940s, collectors depositing specimens in BAR tended to use *species* numbers rather than the *collection* numbers familiar to all taxonomists. There are many cases where the same species number appears on multiple collections, and there are many cases of a single species number winding up scattered among different species as specimens have been reidentified and as taxonomic concepts have changed. We have cited such old species numbers as though they were collection numbers, finding that confusion is avoided as long as collection dates and localities are cited, also. All collections more recent than the 1940s bear true collection numbers in conformity with modern practice. The collection numbers cited with the photographs apply to collections made at the same sites and from the same species as the photos but not necessarily on the same dates, nor from the same individual plants. When possible, for each species we have added a reference to the *Flora of the Lesser Antilles* ("FLA") and to the *Flora of Barbados* ("Gooding et al., Fl. Barbados").

Potentially confusing terms were applied as follows:

achene—any sedge fruit

bract—foliar organ subtending an inflorescence

culm—inflorescence-bearing stem

order of branching—excludes spikelet axes

pseudolateral—used to describe inflorescence overtopped by a bract that continues the culm axis

rachilla (= rhachilla)—the spikelet axis

ray—first-order branch of an umbellate inflorescence

raylet—second-order branch of an umbellate inflorescence

scale—the small foliar organ subtending an individual flower (referred to as "glume" by some authors)

spike—any spikelet-bearing inflorescence axis

spikelet—the ultimate order of branching, which bears scales and flowers

spikelet length—refers to mature spikelets. Sedge spikelets can elongate dramatically during maturation.

style—branch at the summit of the gynoecium

umbellate—resembling an umbel by having multiple axes diverge spokelike from a single point

KEY TO THE SEDGES OF BARBADOS

1. Plants with cauline leaves; flowers unisexual, the plants monoecious (*Scleria*) (2)

[Note: *Cyperus compressus* sometimes has cauline leaves near the base, but the flowers are perfect.]

 2. Leaves mostly > 5 mm wide; achene with basal swelling (hypogynium) 26. *Scleria melaleuca*
 2. Leaves mostly < 2.5 mm wide; achene without basal swelling 25. *Scleria lithosperma*
1. Plants with leaves strictly at top of culm (bracts), or at base of culm, or absent; flowers perfect (3)
 3. Inflorescences not subtended by leafy bracts (4)
 4. Plants leafless except for bladeless basal sheaths; flowers with hypogynous bristles; achenes with thickened caps derived from style bases; culm topped with single spikelet (*Eleocharis*) (5)
 5. Spikelets 20 or more mm long (6)
 6. Stems triangular (fresh), nonseptate (examined externally when dry) .. 16. *Eleocharis mutata*
 6. Stems terete (fresh), septate (as examined externally when dry) 14. *Eleocharis interstincta*
 5. Spikelets < 20 mm long (7)
 7. Spikelets usually 8–15 mm long, fusiform or lanceolate 15. *Eleocharis macrostachya*
 7. Spikelets < 6 mm long, globose to ovate-lanceolate 13. *Eleocharis geniculata*
 4. Plants with leaf blades; flowers lacking hypogynous bristles; achenes free of style bases; culms usually bearing multiple spikelets, or single in *Abildgaardia ovata* (*Fimbristylis/Abildgaardia*) (8)
 8. Spikelet one per culm, whitish 1. *Abildgaardia ovata*

- 8. Spikelets several per culm, brown (9)
 - 9. Spikelets < 4 mm long; scales with hyaline margins
 - .. 18. *Fimbristylis cymosa* subsp. *spathacea*
 - 9. Spikelets usually 5 mm or longer; scales with dark margins (or not translucent white) (10)
 - 10. Styles 3; stems flattened and 3 mm wide ...
 - 17. *Fimbristylis complanata*
 - 10. Styles 2; stems terete or if flattened < 2 mm wide (11)
 - 11. Inflorescence dichotomously branched, with 2-3 orders of branching; spikelets < 3 mm wide
 - 19. *Fimbristylis dichotoma*
 - 11. Inflorescence umbellate, otherwise unbranched; spikelets > 3 mm wide (scales often pubescent)
 - 20. *Fimbristylis ferruginea*
- 3. Inflorescences subtended by leafy bracts (12)
 - 12. Leaves and bracts usually < 1 mm wide
 - 27. *Torulium filiforme*
 - 12. Leaves and bracts mostly > 2 mm wide (13)
 - 13. Bract single, continuing axis of culm past the inflorescence (styles 2)
 - 6. *Cyperus laevigatus*
 - 13. Bracts 2 or more (14)
 - 14. Bracts conspicuously whitened at base ..
 - 24. *Rhynchospora nervosa*
 - 14. Bracts green (15)
 - 15. Bracts 3, subtending an apparently unbranched dense globose head (*Kyllinga*) (16)
 - 16. Heads white (fresh); scales with winged keels scabrous-ciliate for most of their length; stamens 3
 - 22. *Kyllinga nemoralis*
 - 16. Heads green (fresh); scales with un-winged keels scabrous-ciliate near the center if at all; stamens 2 21. *Kyllinga brevifolia*

15. Bracts 1–many; inflorescence not a dense globose head (17)
17. Bracts 12 or more 3. *Cyperus alternifolius*
17. Bracts 1–9 (18)
18. Plants often > 1 m tall, having leaves < 2 cm wide; spikelet-covered inflorescence axes commonly > 4 cm long (excluding spikelets); inflorescence with 3 strongly developed orders of branching (not including the spikelets); styles 2 2. *Cyperus alopecuroides*
18. Plants < 1 m tall (infrequently taller), having leaves usually narrower than 1 cm; spikelet-covered axes usually < 3 cm long; inflorescence usually with 1 or 2 orders of branching (not including the spikelets); styles 2 or 3 (19)
19. Scales with the midvein drawn out into a cusp ... 4. *Cyperus compressus*
19. Scales with the midvein not protruding past the blade, or the midvein merely mucronate (20)
20. Spikelets 10 mm or more long (21)
21. Spikelets purplish .. 11. *Cyperus rotundus*
21. Spikelets greenish to straw-colored 12. *Cyperus sphacelatus*
20. Spikelets < 10 mm long (22)
22. Spikelets 8 or fewer per inflorescence ray (23)
23. Inflorescence condensed and headlike or rarely with visible rays; spikelets ascending relative to ray, 2–3 mm wide 10. *Cyperus planifolius*
23. Inflorescence uncrowded, umbellate; spikelets perpendicular to ray, 1 mm wide 28. *Torulinium odoratum*
22. Spikelets > 8 per inflorescence ray (24)
24. Scales (including those fallen from spikelets) > 30 on mature spikelets; stamen 1 9. *Cyperus ochraceus*
24. Scales < 30; stamens 1–3 (25)

25. Plants viscid when fresh; bracts thick and fleshy; spikelets with dark markings, inserted digitately to form globose clusters 5. *Cyperus elegans*
25. Plants not viscid; bracts flat; spikelets uniformly colored, inserted pinnately to form clusters longer than broad ...
..... (26)
26. Styles 2; leaves 1–2 (4) mm wide; basal portion of raylets exposed; spikelets 4–9 mm long
..... 23. *Pycreus polystachyos*
26. Styles 3; leaves > 3 mm wide; raylets absent or completely covered with spikelets; spikelets < 5 mm long (27)
27. Plants 20–60 cm tall; exposed portions of rays < 1.2 cm long; spikelets straw-colored or whitish 8. *Cyperus luzulae*
27. Plants up to 1–2 m tall; exposed portions of rays commonly 2–several cm long; spikelets dark brown 7. *Cyperus ligularis*

SPECIES DESCRIPTIONS AND SPECIMEN CITATIONS

Abildgaardia Vahl, Enum. Pl. 2: 296. 1805.

Culms tufted and filiform; *leaves* basal; *inflorescences* with usually just one (rarely 2 or 3) terminal spikelet(s); *scales* 3-nerved, deciduous, subdistichous; *stamens* 3; *style* 3-cleft and with broadened base; *achenes* verrucose. About 15 (sub)tropical species in the New World and Old World.

1. ***Abildgaardia ovata*** (N. L. Burm.) Kral, Sida 4 (2): 72, fig. 2. 1971. Figure 1.

Carex ovata N. L. Burm., Fl. Ind. 194. 1768.

Fimbristylis ovata (N. L. Burm.) Kern, Blumea 15: 126. 1967. FLA 3: 235.

Abildgaardia monostachya (L.) Vahl, Enum. Pl. 2: 296. 1805. Gooding et al., Fl. Barbados 73.

Small, nearly glabrous, tufted sedge to 40 cm tall; *culms* thin, under 1 mm diam.; *leaves* grasslike, stiff, narrower than 1 mm, in dense tufts, shorter than the culms; *inflorescences* lance-ovate, pale, 7–10 (20) mm long, 3–6 mm wide, often subtended by small, inconspicuous linear, hispidulous *bracts* to 6 mm long appressed to the inflorescence base, disintegrating acropetally;

spikelet generally solitary; *scales* 2-ranked, keeled, often nearly white, broadly ovate with the pronounced midrib extending as a mucro.

SPECIMENS EXAMINED. **Barbados.** ST. JOHN: In sour grass pasture near Bath Wood, 27 Mar 1937, *McIntosh & Allan 375* (BAR). ST. PETER: Speightstown, on wet marly sand, 10 Oct 1996, *Rogers 96-77* (BAR). ST. PHILIP: Mt. Pleasant, coralstone-rocky meadow on hilltop, 25 Sep 1996, *Rogers 61* (BAR, MICH); Penny Hole, sea cliffs, 27 May 1990, *Carrington & Taylor 1209* (BAR); Foul Bay, sour grass pasture, Aug 1940, *Gooding 375* (BAR). Parish unclear: Waterford, "3.8.01," "452" (BAR).

Abildgaardia ovata is a tough sedge abundant in Barbados, characteristic of exposed, sunny, often (but not necessarily) rocky sites. This species tolerates dry or wet conditions. It is abundant on the athletic field at the University of the West Indies campus, on rocky outcrops, and on wet mud in Graeme Hall Swamp. The plants are recognized by their extremely thin, densely tufted leaves, extremely thin culms, and whitish, more or less lanceolate, solitary heads with 2-ranked scales. *Abildgaardia ovata* is pan-tropical.

Cyperus L., Gen. Pl. 12. 1737. Sp. Pl. 44. 1753.

Culms 3-angled, usually topped by corymbose-umbellate *inflorescences* subtended by (1) several foliar *bracts*; *leaf blades* (usually) present at base of culm; *spikelets* not disarticulating; *flowers* perfect, lacking hypogynous bristles; *styles* 3 or rarely 2, not jointed at insertion onto ovary. Approximately 750 species, worldwide.

2. ***Cyperus alopecuroides*** Rottb., Descr. Pl. Rar. 20. 1772. FLA 3: 259. Figures 2, 3.

Very large glabrous, thick, slightly succulent sedge often standing over 1.5 m tall; *culm* smooth, thick, fleshy, triangular, up to 7 mm thick at the apex; *leaves* a little succulent, up to 150 cm long and 22 mm wide, smooth-margined; *inflorescence* up to ca. 40 cm tall × 60 cm wide, often with 3 well-defined orders of branching (excluding the spikelets); *bracts* ca. 4, resembling the leaves, 1.5 cm wide, up to ca. 1 m long; *rays* up to 9 (or probably more), up to 26 cm long, bare except for the apical cluster of *raylets*, these up to 11 cm long, either resembling the primary rays or covered densely with spikelets; *third-order branches*

(when present) up to 4 cm long, fingerlike with a dense covering of spikelets; *spikelets* elongating to ca. 1 cm, with as many as 30 delicate lance-acuminate to oblong, apiculate *scales* ca. 1.5 mm long, having parallel greenish nerves (dry); *stamens* 2; *styles* 2; *achenes* dark brown, glossy, biconvex, elliptic to obovate.

SPECIMENS EXAMINED. **Barbados.** CHRIST CHURCH: Graeme Hall Swamp, in water at edge of woods, sunny, 22 Dec 1996, *Rogers 96-166* (BAR). ST. PHILIP: Golden Grove, drainage ditch [modified stream] through muddy pasture, in running water, clumps scattered in stream, 25 Sep 1996, *Rogers 96-64* (BAR-immature plant); same locality, 6 Dec 1996, *Rogers 96-150* (MICH); same locality, 7 Jan 1997, *Rogers 97-2* (BAR); Three Houses, around the first pond downstream from Three Houses Park, 27 Jan 1997, *Rogers 97-8* (BAR).

Prior to the present study, *Cyperus alopecuroides* had not been reported from the island. We have collected *C. alopecuroides* at three sites, all in nitrogen-rich mucky places in or immediately alongside water. The species is recognized by its massive size frequently exceeding 1.5 m tall and with leaves exceeding 2 cm wide, by its compound umbellate inflorescences frequently having three pronounced orders of branching, and by the fingerlike ultimate inflorescence axes comprised of very tightly crowded short spikelets standing out from the inflorescence axis like bristles of a bottlebrush. *Cyperus alternifolius* differs in overall appearance from *C. alopecuroides* by having well over 10 (vs. ca. 4) bracts, these of similar length and width (vs. of mixed sizes). The spikelets of *C. ligularis* are dark brown at maturity, as opposed to light brown or greenish-brown in *C. alopecuroides*, which differs further by having smooth (vs. serrulate) leaf margins. That *C. alopecuroides* has just two (vs. three) styles is unusual in *Cyperus* and distinguishes it from our other large-statured species.

Looking beyond Barbados, few West Indian sedges have the massive size of *Cyperus alopecuroides*, nor do many have inflorescences frequently showing three pronounced orders of branching and with the young spikelets crowded into thick stubby "fingers" on the raylets or on third-order branches. The pantropical *C. imbricatus* Retz. is large and has inflorescences similar to *C. alopecuroides*. The styles in *C. imbricatus*, however, are three, in contrast to the unusual condition of two in *C. alopecuroides*. Moreover, examination of *C. imbricatus* herbarium specimens at

the University of Michigan Herbarium revealed a sedge less fleshy and less massive than the Barbados specimens.

Even though *C. alopecuroides* is probably indigenous to the Old World, Koyama (1979) listed it on Grenada, Guadeloupe, Marie Galante, Montserrat, Nevis, and St. Lucia, making the occurrence on Barbados almost predictable. There is a collection of it from Polk Co., Florida, too (*K. Craddock Burks 1018*, FLAS).

3. **Cyperus alternifolius** L., Mant. Pl. 28. 1767. FLA 3: 257.
Gooding et al., Fl. Barbados 75. Figures 4, 5.

Highly variable sedge of wet places; *culms* often well exceeding 1 m tall, triangular, clothed at the base with bladeless sheaths; *inflorescences* up to ca. 12 cm tall and 25 cm across, often with 2 orders of branching (infrequently with small third-order branches); *rays* up to ca. 8 cm long and the *raylets* up to ca. 2–3 cm long; *bracts* ca. 12–15, uniform, abaxially scabrous, serrulate, ca. 15–30 cm long, up to 13 mm wide; *spikelets* in digitate clusters of 4–18 at apices of rays or raylets, 0.3–1 cm long, flat, lanceolate or ligulate-fusiform; *scales* ca. 2.5 mm long, tightly imbricate in chevron pattern, sharply keeled, with a pronounced midrib, lanceolate, acuminate, often apiculate; *stamens* 3; *stigmas* 3; *achenes* 3-angled.

SPECIMENS EXAMINED. **Barbados.** ST. ANDREW: Scotland District near Haggats Ministry of Agriculture Soil Conservation District facility, 21 Aug 1996, *Rogers 96-13* (BAR). ST. JOSEPH: Near Bloomsbury, swampy area within remote cow pasture, on muddy substrate, 4 Nov 1996, *McClain 96-15* (BAR). ST. MICHAEL: Codrington House, 7 Jul 1902, *Bovell 359* (BAR). Cultivated Specimen: Andromeda Botanic Gardens, 25 Feb 1997, *Rogers 97-14* (BAR).

Referred to as “umbrella sedge,” this species has escaped aggressively from horticulture as an invasive pest forming massive stands in wet sites throughout much of Barbados. A second horticulturally popular sedge, encountered infrequently in Barbados but not escaped, is the enormous *Cyperus papyrus* L. *Cyperus alternifolius* is indigenous to Africa and Madagascar. It may be recognized readily in the field by its large stature and unique cluster of uniform, broad bracts reminiscent of the spokes of an umbrella. It is distinguished from the similarly large *C. alopecuroides* under that species.

4. **Cyperus compressus** L., Sp. Pl. 46. 1753. FLA 3: 251.
Figures 6, 7.

Small sedge to 25 cm tall; *culm* triangular, ca. 1.5 mm diam. at the apex; *leaves* flat, grasslike, a few exceeding the culm, to ca. 27 cm \times 1.5–2.2 mm wide, the sheathing bases purplish (fresh); *bracts* 3–5, up to 20 cm long \times 2.2 mm wide; *inflorescence* up to 4 cm tall \times 5 cm wide (excluding the bracts), simple, umbellate with *rays* to 3.3 cm long, these topped with nearly digitate clusters of 4–6 spikelets; *spikelets* (immature) 8–11 mm long, up to 3 mm wide, flattened, bearing 4–10 flowers; *scales* 3.5–4 mm long, lanceolate-ovate with hyaline margins wrapped around the flowers, and with long-attenuate, divergent tips comprised of the midrib drawn out into a short awn flanked by a pair of cusps rising from the scale margins; *flowers* with 3 *stamens* and with 3 delicate *stigmas* atop a long, threadlike style; *achene* 3-angled.

SPECIMENS EXAMINED. **Barbados.** ST. MICHAEL: Stable behind the Barbados Museum, in sunny moist overgrown lawn exposed to substantial horse waste, 28 May 1997, *Rogers 97-21* (BAR).

Not previously reported from Barbados, this small sedge turned up in a moist, grassy, high-nitrogen site unique to the island. The species distinctively has simple umbellate inflorescences with the rays bearing near-digitate clusters of spikelets. That the spikelet scales have the midveins drawn out into short awns helps with identification. *Cyperus elegans* is similar at first glance, but differs by being larger and by having thick, fleshy (vs. flat) bracts, sticky culms, and compound inflorescences. *Cyperus compressus* occurs pantropically.

5. ***Cyperus elegans*** L., Sp. Pl. 45. 1753. FLA 3: 257. Gooding et al., Fl. Barbados 76. Figures 8, 9.

Delicate, slender sedge; *culm* to 65 cm long, ca. 1.5 mm diam. at the apex, smooth or scabrous, viscid toward the top when fresh; sheath light brown; *leaves* linear, scabrous, numerous, equaling or longer than the culm; *bracts* 2–6 (or more), linear, viscid when fresh, resembling the leaves though sometimes thicker, to ca. 50 cm long; *inflorescence* (excluding bracts) to 16 cm tall and 16 cm wide, exhibiting 2 well-defined orders of branching excluding the spikelets (occasionally with short third-order branches); *rays* up to 12 cm long; *raylets* to 4 cm long; *spikelets* in digitate clusters of 4–16 (20) on rays and raylets, variable in length, up to 12 mm long, 3 (4) mm wide, flattened; *scales* strongly 2-

ranked, ca. 2.5–3 mm long, separating apically at maturity, giving the spikelets a roughened-serrate appearance, lance-ovate with apiculate apices and with broad margins wrapping around the black triangular *achenes*; *stamens* 3; *styles* 3.

SPECIMENS EXAMINED. Barbados. CHRIST CHURCH: Graeme Hall Swamp, 13 Apr 1989, *Carrington & Taylor 1118* (BAR); Oistins, in low area of wet mud (occasional standing water) dominated by this species, across the Coast Road from the Oistins Post Office, 5 Sep 1997, *Rogers 97-3* (BAR). ST. JOHN: Along coastal highway in a disturbed weedy field in standing water, ca. 1 km N of B.E.C. satellite dish, 23 Oct 1996, *Rogers 96-117* (BAR, MICH); same locality, 7 Nov 1996, *McClain 96-22* (BAR); stream in College Estate, Feb 1937, *McIntosh 377* (BAR); Newcastle, 5 Nov 1906, *Dash 610* (BAR). ST. PHILIP: Three Houses, around the first pond downstream from Three Houses Park, 22 Jan 1997, *Rogers 97-9* (BAR).

Cyperus elegans has spikelets similar to *C. planifolius*, *C. compressus*, and *C. alternifolius*. *Cyperus elegans* differs from these and all other Barbados sedges by being viscid when fresh, and by having uniquely long, linear, fleshy bracts. These seldom exceed 2 mm across, as encountered on herbarium specimens. *Cyperus elegans* occurs in wet (usually brackish?) sunny sites scattered in the New World tropics.

6. ***Cyperus laevigatus* L.**, Mant. Pl. 2: 179. 1771. FLA 3: 259.
Gooding et al., Fl. Barbados 76. Figure 10.

Rushlike, rhizomatous, glabrous, nearly leafless sedge; *culms* vertical and crowded, tapered, terete or flat when dry, up to 40 cm long (including the bract), 1–2 mm diam., striate (dried), bearing a single bract extending the culm axis beyond the pseudolateral inflorescence; *leaves* sheathlike; sheath brown (dried), to ca. 7 cm long, often apiculate; *inflorescences* compact, to 15 mm long × 10 mm wide, consisting of a tight cluster of up to 6 (13) sessile, flattened *spikelets*, these up to 9 mm long × 2 mm wide; *scales* imbricate, 1.2–1.6 mm long, broadly ovate, keeled, some with the keel protruding as a short point; *stamens* 3; *styles* 2; *achene* obscurely and unevenly 3-lobed.

SPECIMENS EXAMINED. Barbados. CHRIST CHURCH: Graeme Hall Swamp, 8 Feb 1937, *McIntosh & Allan 305* (BAR). ST. JOHN: Near stream, Martins Bay, 14 Jan 1990, *Carrington 1148* (BAR). ST. JOSEPH: Railway line at Tenby, Jul 1937, *McIntosh "435? = 305a"* (BAR).

Two searches by Rogers during January and April 1997 at

“Martin’s Bay” failed to yield *Cyperus laevigatus*. The species has not turned up in a 1997 plant inventory of Graeme Hall Swamp conducted by Dr. S. Carrington of the University of the West Indies along with G. Rogers. The species is distinctively rushlike with the bract continuing the culm axis, placing the small inflorescence in a pseudolateral position. The spikelets resemble tiny rattles from rattlesnakes. The most likely Barbados sites for *C. laevigatus*, if it turns up again, are brackish stream outlets in or near St. John Parish. The species is distributed around the world in warm climates.

7. ***Cyperus ligularis* L.**, Pl. Jamaica. Pug. 3. 1759. Gooding et al., Fl. Barbados 76. Figures 11–13.

Mariscus ligularis (L.) Urban, Symb. Antill. 2 (1): 165. 1900. FLA 3: 267.

Coarse plants in large, well-defined, pale green, glaucous, conspicuous clumps sometimes >2 m tall; *culm* sturdy, erect, 3-angled, up to 4 mm diam. at the apex.; *leaves* sometimes >1 m long, frequently a little shorter than the culm, often ca. 10 (15 basally) mm wide, sharply serrulate, the leaf bases tending to be reddish-brown; *bracts* numerous, inserted at a reddish-brown (dry) swelling, highly variable in length, the longest ca. 85 cm long, up to 8 (10) mm wide, similar to the leaves; *inflorescence* umbellate, 6–25 cm across (excluding the bracts), up to 14 cm long, with one well-defined order of branching (though often with short raylets densely covered with spikelets); *rays* up to 11 in number, up to 11 (15) cm long, the spikelets densely aggregated into dark brownish, elongate-globular, sometimes-branched heads ca. 1 cm wide (excluding branches) and up to 4.5 cm long, when branched the axes of the branches hidden by spikelets; *spikelets* 4–5 mm long, 1 mm wide, with 3–5 *scales* apparent, these ca. 2.5–2.8 mm long, ovate-lanceolate, keeled, with a midvein and with longitudinal nerves; *stamens* 3; *styles* 3; *achenes* sharply 3-angled.

SPECIMENS EXAMINED. **Barbados.** CHRIST CHURCH: Graeme Hall Swamp, 10 Feb 1937, *McIntosh & Allan 306(a)* (BAR); Coastal Road entrance to Graeme Hall Swamp, marly sand, 8 Oct 1996, *McClain 96-1* (BAR); Silver Sands Park, 8 Oct 1996, *McClain 96-2a* (BAR); area of standing water behind beach, between Silver Sands Hotel and Silver Rock Hotel, 27 Sep 1996, *Rogers 96-72* (BAR). ST. ANDREW: Dune area between beach and East Coast Rd. between Belleplaine and Barclays Park, 21 Aug 1996, *Rogers 96-19* (BAR, MICH). ST.

JOHN: Along coastal highway, low area in highly disturbed weed field, standing water, 23 Oct 1996, *Rogers 96-116* (BAR). ST. MICHAEL: Bridgetown, Carreenage, on rocks, 13 Nov 1996, *Forde 96-23* (BAR). ST. PETER: Beach on coast road, under bridge, on verge of standing water, Speightstown, 10 Oct 1996, *McClain 96-5* (BAR).

Cyperus ligularis is one of the more abundant, widespread, and conspicuous sedges on Barbados. It frequently inhabits sunny, sandy, or rocky places, very commonly near the sea. It is particularly abundant and robust in localities where fresh water meets the sea, such as mouths of streams. *Cyperus ligularis* is recognized by a glaucous coloration on the stem and foliage, by its large stature (see *C. alopecuroides* for differentiation from other large sedges), by its severely saw-tooth leaf margins, and by its short, dark brown spikelets with only 3–5 scales. The spikelets are densely clustered into thick (1 cm), stubby, dark brown “fingers” on the rays and on short (hidden by spikelets) raylets. *Cyperus ligularis* grows in the New World tropics and in Africa.

8. ***Cyperus luzulae*** (L.) Rottb. ex Retz., *Obs. Bot.* 4: 11. 1786.
FLA 3: 253. Figures 14, 15.

Plants up to 20–60 cm tall; *culms* 3-angled, to 2 mm diam. at the apex, smooth; *leaves* sometimes longer than the culm, up to 5 mm wide; *bracts* usually 6–9, up to ca. 35 (occasionally more) cm long, to 5 (6) mm wide, marginally scabrous; *inflorescence* compact-umbellate, to 7 cm wide and 4 cm tall, with 1 pronounced order of branching (second-order branches, when present, hidden beneath spikelets); *rays* usually with the lower portions bare, to 3 cm long; *spikelets* in dense, conical to cylindrical, hoary-white heads at the tips of the rays, the heads variable in size, up to 1.5 cm × 1.5 cm, often with cryptic second-order branching within the head; *spikelets* flattened, up to 5 mm long × 2 mm broad; *scales* distichous, 1.4–1.6 mm long, strongly keeled, lanceolate (or infrequently oblong); *stamen* 1; *styles* 3; *achene* 3-angled.

SPECIMENS EXAMINED. **Barbados.** ST. ANDREW: Turner’s Hall Woods, damp pasture in woods, Nov 1940, *Gooding 602* (BAR); same locality, 17 Dec 1996, *Rogers 96-159* (BAR). ST. JOSEPH: Near Bloomsbury, pasture in dairy farm, along road between Sturges and Castle Grant, 4 Nov 1996, *McClain 96-11* (BAR, MICH); same locality, 11 Sep 1996, *Rogers 96-50* (BAR); same locality, 20 Sep 1996, *Rogers 96-68* (BAR). ST. THOMAS: Bloomsbury, swampy ground, 15 Feb 1990, *Carrington & Taylor 1174* (BAR). [“Bloomsbury” collections

are recorded in two different parishes because the Bloomsbury area lies at the border between St. Joseph and St. Thomas.]

At a glance this handsome species suggests a small version of *Cyperus ligularis*, and is readily recognized in the field by the distinctive hoary-white (vs. dark brownish) coloration of its more congested, shorter spikelet clusters. Unlike *C. ligularis*, the leaves (but not the bracts) of *C. luzulae* are smooth-margined. The species is widespread in the New World tropics.

For a discussion of nomenclatural complications with the combination "*Cyperus luzulae*," see McVaugh (1993), who justifiably suggested a citation for this combination altered from that usually cited. We have followed McVaugh's suggestion.

9. ***Cyperus ochraceus*** Vahl, Enum. Pl. 2: 325. 1805. FLA 3: 254. Figure 16.

Large sedge 30–70 cm (or sometimes more) tall; *culm* triangular, smooth, to ca. 5 mm diam.; *leaves* to ca. 80 cm long \times 2–8 mm wide, scabrous-margined, long-tapered to a narrow tip; *inflorescence* to 10 cm wide \times 8 cm tall (excluding the bracts); *bracts* several, of uneven lengths, resembling the leaves, to 62 cm long; *orders of branching* 2 (and with the long mature spikelet axes adding a third order of branching); *rays* to 7 cm long, the *raylets* to 2 cm long; *spikelets* numerous in loose umbellate clusters, to 15 (20) mm long, flattened, bearing many small, tightly imbricated scales, these falling from the bases of the rachillae and giving them the appearance of third-order branches; *scales* inserted at angles of over 45 degrees, beak-shaped, brown when dry, 1.5–1.8 mm long, the keel flattened (resembling a flat-bottomed boat); *stamen* 1; *styles* 3; *achenes* triangular.

SPECIMENS EXAMINED. **Barbados.** ST. PETER: Speightstown, dry drainage ditch just S of Almond Beach Resort, 12 Mar 1998, *Rogers 98-18* (BAR).

This distinctive slender sedge ranges in height to sometimes ca. 1 m, with leaves and bracts narrow. The mature compound-umbellate inflorescence has long rays, well-developed and exposed raylets, and long mature spikelets. This species and *Cyperus luzulae* are the only two Barbados species of *Cyperus* having just one stamen per flower.

Cyperus ochraceus has not been previously reported for Barbados. It was brought to our attention by University of the West

Indies student Karen Greenidge, who collected it near her home in Speightstown during the winter of 1996–97. The original site has been destroyed by construction activity. The Rogers collection comes from a second site, likewise discovered by Greenidge near the lost site.

Cyperus ochraceus resembles *C. surinamensis* Rottb., which likewise has one stamen per flower, but which is not known from Barbados. The Barbados sedge is referred to *C. ochraceus* because our material has smooth culms (vs. scabrous in *C. surinamensis*), spikelets comparatively blunt at the tips (vs. acute in *C. surinamensis*), and scales generally inserted at angles greater than 45 degrees (vs. strongly ascending scales in *C. surinamensis*). Moreover, *C. surinamensis* appears to tend toward scales shorter than 1.5 mm (see Strong 1996) as opposed to scales generally exceeding this length on the Barbados sedge. *Cyperus ochraceus* is widespread in tropical and subtropical regions from the U.S. to Argentina.

10. **Cyperus planifolius** L. C. Rich., Acta Soc. Hist. Nat. Paris 1: 106. 1792. Gooding et al., Fl. Barbados 77.

Figures 17, 18.

Mariscus planifolius (L. C. Rich.) Urban, Symb. Antill. 2 (1): 165. 1900. FLA 3: 268.

Cyperus brunneus sensu Griseb., Fl. Brit. W. Ind. 565. 1864, non Sw. 1797 (see discussion).

Coarse, stiff, robust, rhizomatous, often pale green, glabrous (except for scabrous foliar margins) sedge; *leaf sheaths* dark-colored, often purplish (dried); *culms* sharply triangular, to 60 cm tall, 1.5–2 (3) mm diam. apically; *leaves* to 55 cm long (sometimes exceeding the culm) and up to 5–6 mm wide, serrulate to nearly smooth along the margins; *inflorescence* dense, compact-umbellate, up to 9 cm wide and 5 cm tall, usually more or less spherical and with the rays difficult to discern, these 5–6 in number, to 5 cm long, sometimes devoid of spikelets toward the base; *bracts* resembling the leaves, 4–5, of unequal lengths (with one bract tending to be far longer than the others), up to 30 (40) cm long and 4 (7) mm wide; *spikelets* to 15 (18) mm long, up to 3 mm wide, with up to 10–14 (16) distichous scales 3–3.5 mm long, these broadest above the middle, exhibiting strongly developed longitudinal nerves, often purplish (dried), having green (or

brown) keeled midribs tending to protrude past the scale apex; *stamens* 3; *styles* 3; *achenes* 3-angled, obovate.

SPECIMENS EXAMINED. **Barbados.** CHRIST CHURCH: Entrance to Graeme Hall Swamp, south coastal road, marly sand, 8 Oct 1996, *McClain* 96-2b (BAR), 96-3a (BAR), 96-3b (BAR); on backside of seaside dunes, between Silver Sands Hotel and Silver Rock Hotel [in Silver Sands Park], 27 Sep 1996, *Rogers* 96-73 (BAR, MICH). ST. MICHAEL: Bridgetown, swampy land, railway lands, Oct 1940, *Gooding* 600 (BAR). ST. PHILIP: Penny Hole, sea cliff, 27 Mar 1990, *Carrington & Taylor* 1210 (BAR). No locality data: 7 Jul 1902, *Bovell* 274 (BAR). No locality data and no collector data: Oct 1869, Herbarium, Royal Botanic Gardens, Trinidad and Tobago 3162 (BAR).

Authors are divided on the question of whether *Cyperus brunneus* Sw., Fl. Ind. Occ. 1: 116, 1797 is best interpreted as a synonym of *C. planifolius* (1792). For example, Koyama (1979) treated the two as distinct in contrast with Correll and Correll (1982) who placed them in synonymy. We find Barbados specimens matching Koyama's description of *C. brunneus* to intergrade with those matching descriptions of *C. planifolius* and tentatively suspect, from our narrow standpoint, synonymy to be the better choice. A proper investigation of the matter requires examination of the types and materials from throughout the ranges of the two entities.

Habitats for *Cyperus planifolius* are diverse, though often sandy. In Barbados it is most abundant on sand dunes behind beaches. This species is found primarily around the Caribbean.

11. ***Cyperus rotundus* L.**, Sp. Pl. 45. 1753. FLA 3: 250. Gooding et al., Fl. Barbados 78. Figures 19, 20.

Slender, wandlike, glabrous (except for minutely serrulate foliar margins), stoloniferous, weedy, highly variable sedge with the rhizome often bearing a tuber; *culm* 18–60 cm tall, 1.5 mm diam. apically, slender, triangular, smooth; *leaves* sometimes numerous and forming “rosettes” of up to ca. 15, having a light brown sheathing base, shorter than the culm, 6–26 cm long \times 2–5 mm wide, the lateral nerves strongly developed on the broader leaves; *bracts* often 2 or 3, leafy, modest, one bract generally longer than the other(s), up to 18 cm long, though usually much shorter; *inflorescence* up to 10 cm long and 9 cm wide, with 1 or 2 orders of branching (excluding the spikelets), umbellate, loose, with 2–5 unequal rays up to 8 cm long; *raylets* to 2 cm long; *spikelets* uncrowded, 2–many per ray or raylet, sleek, nar-

row, fingerlike, 0.5–3 cm long, 1–1.5 mm wide, dark purplish-brown (fresh and dry); *scales* 3–3.2 mm long, tightly appressed, ovate, dark purplish-brown, with greenish keel; *stamens* 3; *styles* 3; *achenes* 3-angled.

SPECIMENS EXAMINED. **Barbados.** CHRIST CHURCH: Entrance to Graeme Hall Swamp, south coastal road, marly sand, 8 Oct 1996, *McClain 96-4* (BAR); Oistins, in low area of wet mud (occasional standing water) dominated by *Cyperus elegans*, across road from Post Office, 5 Sep 1997, *Rogers 97-38* (BAR). ST. GEORGE: Roadside ditch, dominant plant between road and canefield along road connecting highways 4 and 5 via Carmichael, 15 Nov 1996, *Rogers 96-132* (BAR, MICH). ST. JOSEPH: Andrews Plantation, Oct 1935, *Mayers 2* (BAR). ST. MICHAEL: Univ. of the West Indies campus in full sun on disturbed ground, 20 Aug 1996, *Rogers 96-9* (BAR, MICH). ST. PETER: Speightstown, beach along the coast road on marly sand, 10 Oct 1996, *McClain 96-6* (BAR). ST. PHILIP: Three Houses, the first pond downstream from Three Houses Park [in cultivated field adjacent to pond], 27 Jan 1997, *Rogers 97-10* (BAR).

A highly variable, adaptable, pervasive agricultural/horticultural pest known as “nutgrass,” appearing throughout Barbados on dry or wet disturbed sites. The species is recognized by its few, very long, purplish spikelets (cf. the apparently rare *Cyperus sphacelatus*). *Cyperus rotundus* is found worldwide.

12. ***Cyperus sphacelatus*** Rottb., *Descr. Pl. Rar.* 21. 1772. FLA 3: 250. Gooding et al., *Fl. Barbados* 78. Figure 21.

Slender wandlike, glabrous (except for foliar margins) sedge; *culm* slender, bare, up to 20 cm long, topped by an umbellate inflorescence and long, leaflike bracts; *leaves* grasslike, up to 25 cm long and 2 mm wide, most shorter than the culm; *bracts* ca. 3, of unequal lengths, the largest to 20 cm long and 2 mm wide; *rays* 4–6, up to ca. 5 cm long, free of spikelets toward the base; *spikelets* 5–12 per ray, up to 12 mm long and slightly exceeding 1 mm wide, fingerlike, narrow, sleek, light khaki (infused with patches of darker coloration visible under magnification) when dry; *scales* lanceolate, ca. 2.5 mm long, with a thick keel darker than the surrounding tissues; *stamens* 3; *styles* 3; *achenes* dark brown, smooth, 3-angled.

Cyperus sphacelatus is known from Barbados from just one specimen: ST. PHILIP: Three Houses, bank of stream, Aug 1940, *Gooding 649* (BAR; annotated as *C. sphacelatus* by R. A. Howard, 1990). Our description comes entirely from this specimen, which resembles *C. rotundus*. The former differs from *C. rotundus* by

having scales of lighter overall color (predominantly light-khaki vs. predominantly purplish-brown), a reportedly less pronounced wing on the rachilla (our limited material shows *C. sphacelatus* to have a substantial wing), a reportedly annual habit, and the absence of a rhizome. Gooding et al. (1965) further distinguished *C. sphacelatus* by a tendency toward moist habitats as opposed to *C. rotundus* being a weed of cultivated ground. We find this distinction weak, since the many habitats occupied by *C. rotundus* include moist places.

We have failed to encounter *Cyperus sphacelatus* despite multiple searches of the 1940 collection locality and surrounding area. The entire area is occupied by a park, agricultural land, a highly disturbed stream, small gully, and small human-made ponds. Substantial alteration since 1940 is certain. *Cyperus rotundus* is presently abundant in the area. *Cyperus sphacelatus* occurs in the New World tropics and in Africa.

Eleocharis R. Br., Prodr. Fl. Nov. Holl. 224. 1810.

Spikelets solitary, terminating the culm; *flowers* with hypogynous bristles; *stamens* 3; *style* jointed at thick, persistent *style base*. Approximately 120 species distributed worldwide.

13. ***Eleocharis geniculata*** (L.) Roem. & Schult., Syst. Veg 2: 150. 1817. FLA 3: 232. Gooding et al., Fl. Barbados 79.

Figure 22.

Scirpus geniculatus L., Sp. Pl. 48. 1753.

Eleocharis caribaea (Rottb.) Blake, Rhodora 20: 24. 1918.

Variably sized, clump- or mat-forming sedge; *culms* wiry, threadlike, up to 1 mm diam. and 30 cm long (though often far shorter); *leaves* represented only by short, inconspicuous sheaths at the base of the culm; *spikelets* cone-shaped, to 6 mm long \times 3 mm wide, much wider than the culm; *scales* 1.6–2 mm long, elliptic to obovate, acute to rounded apically, with a pronounced green midrib; *styles* 2; *achenes* dark brown and shiny, with a conspicuous apical tubercle; *hypogynous bristles* much exceeding the achene.

SPECIMENS EXAMINED. **Barbados.** CHRIST CHURCH: Graeme Hall Swamp, full sun, mud on side of water-filled ditch, 11 Jun 1997, *Rogers 97-23* (BAR); Graeme Hall Swamp, 8 Feb 1937, *McIntosh & Allan 303* (BAR). ST. ANDREW: Sedge Pond, marly soil near edge of pond, Feb 1941, *Gooding 303* (BAR);

near Haggats, wet soil on bank where road leading E from Chalky Mt. to Highway 2 crosses stream, sunny, 21 Aug 1996, *Rogers 96-14* (BAR, MICH). ST. JOSEPH: Bathsheba, damp places, grass land near sea, 7 Jan 1918, [collector unclear] 8678 (BAR). ST. THOMAS: Bloomsbury, swampy ground, 15 Mar 1990, *Carrington & Taylor 1173* (BAR).

Eleocharis geniculata, though highly variable in size, is by far the smallest-statured of the *Eleocharis* species on Barbados. Its solitary terminal spikelets are under 6 mm long. The plants occur on swampy ground and along streams in shade or sun, forming thick clumps or sometimes mats. The species is pantropical.

14. ***Eleocharis interstincta*** (Vahl) Roem. & Schult., *Syst. Veg.* 2: 149. 1817. FLA 3: 226. Gooding et al., *Fl. Barbados* 79. Figures 23, 24.

Scirpus interstinctus Vahl, *Enum. Pl.* 2: 251. 1805.

Plants robust, rhizomatous, sometimes forming dense monospecific stands; *culms* clumped, terete, septate (septa visible externally when dry), to 1 m tall, to 6 mm diam. (dry and pressed); *leaf sheaths* clasping the culm tightly, often purplish (dry), bladeless, to 22 cm long; *spikelet* single, to 40 mm long \times 7 mm wide (before bracts spread), terminating the culm, with anthers and styles exposed far before the culm attains full length; *scales* 4–5 mm long, spirally arranged, oblong, obtuse apically with a colorless-translucent wavy apical margin; *style* with 3 short branches; *achene* obovate, flat, bearing several retrorsely barbed hypogynous bristles.

SPECIMENS EXAMINED. **Barbados.** ST. JOHN: Bath, stream near Bayview, May 1946, *Gooding 408* (BAR). ST. JOSEPH: Cadbury, pond at margin, 18 Jul 1937, *McIntosh 408* (BAR); pasture in dairy farm near Bloomsbury, along road between Sturges and Castle Grant, low wet area, 11 Sep 1996, *Rogers 96-49* (BAR, MICH). Parish unknown: Henson's Lily Pond, Jan 1937, *Allan 408a* (BAR).

Eleocharis interstincta resembles *E. mutata* in having a large size, a tendency to form monospecific lawns in wet sites, and tall, leafless culms topped with long cylindrical spikelets that reveal anthers and styles while the culm is still short. *Eleocharis interstincta* has terete septate culms, whereas *E. mutata* has triangular (fresh) nonseptate culms. *Eleocharis interstincta* ranges from the U.S. to Brazil.

15. ***Eleocharis macrostachya*** Britton in Small, *Fl. Southeast.*

U.S. 184. 1903. FLA 3: 230. Gooding et al., Fl. Barbados 80. Figure 25.

Slender, densely tufted sedge to a little over 50 cm tall; *culm* 1–1.5 mm diam.; bases of culms enclosed by reduced bladeless sheaths; *spikelets* 8–15 mm long \times 3–5 mm wide, with ligulate to lanceolate *scales* acute or acuminate apically, ca. 3.2 mm long, the midrib narrow and failing to reach the apex; *styles* 2.

Eleocharis macrostachya has been collected only once in Barbados, in fact only once in the Lesser Antilles (Koyama 1979). The sole Barbados specimen, from St. Joseph Parish, is labeled "Herbarium, Department of Agriculture, Barbados, Aug 1904, No. 545" (BAR). The identity of this odd collection has been confirmed on two occasions prior to the present study. According to Koyama (1979), *E. macrostachya* ranges from Canada to Argentina.

16. ***Eleocharis mutata*** (L.) Roem. & Schult., Syst. Veg. 2: 155. 1817. FLA 3: 226. Gooding et al., Fl. Barbados 80. Figures 26, 27.

Scirpus mutatus L., Pl. Jamaic. Pug. 6. 1759.

Tall, robust rhizomatous sedge tending to form extensive monospecific stands; *culms* to 75 cm tall, 3–7 mm wide (dried and pressed), tapered, sharply triangular; *leaves* represented only by sheaths up to 28 cm long; *spikelets* cylindrical, solitary on the culm tip, to 4.5 cm long, 5–8 mm wide; *scales* ca. 4 mm long, broadly oblong, rounded and sometimes erose at the tip, the margins broad and hyaline, midrib very broad; *styles* 3 (2); *achenes* 1.5 mm long, 1 mm wide, with pronounced longitudinal striations, and with more subtle, epidermal horizontal striations; *style base* dark-colored, deltoid; *hypogynous bristles* about as long as or a little longer than the achene, with retrorse cilia.

SPECIMENS EXAMINED. **Barbados.** CHRIST CHURCH: Graeme Hall Swamp, dominant understory herb, forming a lawn throughout much of the swamp, 9 Nov 1996, *Rogers 96-128* (BAR, MICH); Graeme Hall Swamp, 8 Feb 1937, *McIntosh & Allan 302* (BAR); Graeme Hall Swamp, 13 Apr 1989, *Carrington & Taylor 1117* (BAR); Chancery Lane Swamp, in the marsh, standing water, abundant, 23 Nov 1996, *Rogers 96-138* (BAR). ST. PHILIP: Three Houses, the first pond downstream on the Three Houses River from the park, 27 Jan 1997, *Rogers 97-11* (BAR).

Eleocharis mutata is a large species with uniquely (for *Eleo-*

charis on Barbados) triangular culms. It is capable of forming immense monospecific “lawns” in wet sites, as it does in Graeme Hall Swamp, where this is the dominant herbaceous species. *Eleocharis mutata* occurs in the New World tropics and in Africa.

Fimbristylis Vahl, Enum. Pl. 2: 285. 1805, *nom. cons.*

Tufted sedges with thin *culms* much taller than the strictly basal leaves. *Bracts* present but generally less well developed than in *Cyperus*. *Inflorescences* umbellate or thyriform, with fusiform to globose *spikelets*. *Flowers* perfect, lacking hypogynous bristles; *stamens* and *styles* 2 or 3, the styles deciduous and often flattened and fimbriate. Approximately 150 species, mostly of the Old World.

17. ***Fimbristylis complanata*** (Retz.) Link, Hort. Berol. 1: 292. 1827. FLA 3: 236. Figure 28.

Scirpus complanatus Retz., Observ. Bot. 5: 14. 1789.

Robust sedge to ca. 80 (100) cm tall; *culm* flat, 3 mm wide; *leaves* up to 58 cm long \times 5 mm wide, scabrous marginally; *inflorescence* to 9 cm tall \times 11 cm wide, complex, open, thyriform, with up to 3 orders of branching (excluding spikelet axes), subtended by 1 or more foliar *bracts* up to 11 cm long \times 4 mm wide, these as wide as or wider than the culm; *spikelets* fusiform, 3.5–5 mm long, usually ca. 1 mm wide; *scales* ca. 2.5 mm long, lanceolate, keeled, with a thick midrib extending into a short mucro, the margins thin; *stamens* and *styles* 3, the stigmas much shorter than the flattened style; *achene* elliptic-obovate, roughened on the surface.

SPECIMENS EXAMINED. **Barbados.** ST. ANDREW: Highway 2 between Baxters and Haggats, roadside ditch, 11 Sep 1996, Rogers 96-44 (BAR); Highway 2, 1.6 km S of road to Chalky Mt., roadside weed, 18 Sep 1996, Rogers 96-54 (BAR, MICH).

This sedge was previously unreported in Barbados. It is easily recognized by its broad, flat culm topped with a particularly complex thyriform inflorescence. The spikelets are distinctively narrow. The Barbados localities are open, disturbed, and sunny. *Fimbristylis complanata* is pantropical.

18. ***Fimbristylis cymosa*** R. Br., Prodr. Fl. Nov. Holl. 228. 1810, subsp. ***spathacea*** (Roth) T. Koyama, Micronesica 1: 83.

1964. FLA 3: 238. Gooding et al., Fl. Barbados 81 (as "*F. cymosa*"). Figure 29.

Fimbristylis spathacea Roth, Nov. Pl. Sp. 24. 1821.

Wiry, tough, tufted sedge; *culm* to 60 (100) cm tall, often rising from a trunklike, thick, congested, vertical base; *leaves* highly variable, numerous and crowded, shorter than the culm, up to 36 cm long (though often much shorter) \times 2 mm wide (sometimes wider at the base), frequently thickened, the apices often rounded; *inflorescence* compact with numerous spikelets, up to 4.5 cm broad \times 2.8 cm tall; *bracts* 1 (or few), up to 3 cm long \times 3 mm wide, lanceolate; *orders of branching* (excluding the spikelets) 2–3, with the axes tending to curve; *spikelets* light to dark brown, (2.5) 3–4 mm long, 2 mm wide; *scales* 1.3–2 mm long, lance-ovate with hyaline margins and usually rounded to acute apices; *stamens* 2; *styles* 2.

SPECIMENS EXAMINED. **Barbados.** CHRIST CHURCH: Between Silver Sands Hotel and Silver Rock Hotel, sandy substrate behind the beach, 27 Sep 1996, *Rogers 96-71* (BAR, MICH); Graeme Hall Swamp, 13 Apr 1989[?], *Carrington & Taylor 1113* (BAR) [Note—an apparent duplicate specimen with the same collection number is dated "13 Apr 1990." Other collections in the Carrington & Taylor collection series indicate the 1989 date as more likely to be correct.]; Maxwell Coast, near swampy land west of "Calais," May 1940, *Gooding 434* (BAR). ST. ANDREW: Along coastal highway between Belleplaine and Barclays Park, on sandy dunes above beach, 4 Sep 1996, *Rogers 96-32* (BAR); stream bank near bridge on road leading to Highway 2 coming E from Chalky Mt. [There are two roads leading from Chalky Mt. onto Highway 2. This is the more southern, intersecting Highway 2 near Haggats.], 21 Aug 1996, *Rogers 96-17* (BAR). ST. JOSEPH: Railway line at Tenby, Jul 1937, *McIntosh 434* (BAR). ST. PHILIP: Ragged Point Lighthouse, rocks overlooking the sea, 25 Sep 1996, *Rogers 96-65* (BAR).

Authorities disagree on the appropriateness of treating the widespread two-styled "*Fimbristylis spathacea*" as distinct from the Old World, three-styled *F. cymosa*. Koyama (1979) and McVaugh (1993) both discuss this, and supply references to further discussion. Adams (1992) noted that some New World material has three styles. Evidence for treatment as separate species is not compelling, and consequently we follow Koyama. *Fimbristylis cymosa* subsp. *spathacea* is pantropical.

19. ***Fimbristylis dichotoma*** (L.) Vahl, Enum. Pl. 2: 287. 1805.
FLA 3: 242. Gooding et al., Fl. Barbados 81. Figure 30.

Scirpus dichotomus L., Sp. Pl. 50. 1753.

Plants to 70 (80) cm tall (sometimes very reduced); *culms* much exceeding the leaves, slender (up to ca. 1 mm diam.); *leaves* 0.75–1.5 (2) mm wide, to 42 cm long, rounded or acute apically, serrulate marginally; *inflorescence* sometimes with one or more leafy bracts (0.5) 1–7 cm long \times 1–1.5 mm wide, the inflorescence up to 10 cm long \times 9 cm wide, loose and open, with 2 or 3 orders of dichotomous branching (including spikelet axes), having wirelike *rays* up to 4.5 cm long and *raylets* up to 1.5 cm long; *spikelets* (3) 5–11 mm long, 3 mm wide; *scales* 2–2.2 mm long, broadly ovate, with thick conspicuous midrib (continuing as stubby mucro) and thin margins; *achene* lenticular with longitudinal markings, bearing 2 *styles*; *stamen* 1 (or reportedly 2).

SPECIMENS EXAMINED. **Barbados.** ST. JOSEPH: Maynards, pasture, Oct 1935, *Mayers 1* (BAR); Bathsheba, grassland by sea, "7.1.18," [collector unclear] 8677 (BAR); near Bloomsbury, pasture in dairy farm along road between Sturges and Castle Grant, low wet area, 11 Sep 1996, *Rogers 96-51* (BAR, MICH).

Fimbristylis dichotoma has dichotomously branched inflorescences with 2–3 orders of branching. The culms are far narrower (ca. 1 mm vs. 3 mm diam.) than in the similar *F. complanata*. *Fimbristylis dichotoma* is almost worldwide in tropical and temperate regions.

20. ***Fimbristylis ferruginea*** (L.) Vahl, Enum. Pl. 2: 291. 1805.
FLA 3: 241. Gooding et al., Fl. Barbados 81.
Figures 31, 32.

Scirpus ferrugineus L., Sp. Pl. 50. 1753.

Robust, variable, rushlike sedge with tall (to ca. 1 m), terete, tapered *culms* in tufts; *leaves* inconspicuous, much shorter than the culm, to 26 cm tall, under 2 mm wide, smooth to slightly scabrid on the margins, often represented only by sheaths; *bracts* inconspicuous, linear, hispidulous marginally, to 3.5 cm long \times up to 2 mm wide (at the base); *inflorescences* up to 4 cm tall and 3 cm broad; *spikes* umbellate with the *rays* unbranched and of uneven lengths; *spikelets* 2–numerous, light brown (fresh and dry), (5) 7–9 (10) mm long (excluding portions of rachilla from which scales have fallen), 3–5 (7) mm wide; *scales* 3.7–4 mm long, broadly elliptic, shallowly (or not) keeled, with minute pu-

bescence on the keel (or variably spreading across the abaxial face of the scales), mucronate; *stamens* 3; *styles* 2.

SPECIMENS EXAMINED. **Barbados.** CHRIST CHURCH: Graeme Hall Swamp, in and near standing water, much along stream bank, 9 Nov 1996, *Rogers 96-129* (BAR, MICH); Graeme Hall Swamp, Feb 1937, *McIntosh 304a* (BAR); Dover Woods, side of brackish swamp on sandy soil, May 1940, *Gooding 304* (BAR). ST. JOHN: Bath, stream near Bayview, May 1940, *Gooding 304* (BAR) [note repeated "species" number for two different Gooding collections]. ST. LUCY: Seashore, along inlet at River Bay, 19 Dec 1996, *Rogers 96-165* (BAR).

Fimbristylis ferruginea is a tall robust *Fimbristylis* with large (over 3 mm diam.) uniquely rust-colored spikelets. This species is pantropical.

Kyllinga Rottb., *Descr. Icon. Rar. Pl.* 12. 1773, *nom. cons.*

Bracts consistently 3 (in ours): one vertical and the others flanking it; *inflorescences* tightly congested into a burr; *spikelets* 1-flowered, with empty basal scales, disarticulating at the base, bases of scales confluent onto the rachilla; *styles* 2; *achenes* lenticular and 2-sided. Approximately 140 species distributed throughout much of the world.

21. ***Kyllinga brevifolia*** Rottb., *Descr. Icon. Rar. Pl.* 13. 1773.
FLA 3: 283. Figure 33.

Cyperus brevifolius (Rottb.) Endl. ex Hassk., *Cat. Hort. Bogor.* 24. 1844.
Gooding et al., *Fl. Barbados* 75.

Modest grasslike, rhizomatous sedge; *culms* 10–33 cm tall, soft, slender, few-leaved at base; *leaves* narrowly linear, shorter than or occasionally as long as the culm, 1–3 mm wide, scabrid; *basal sheathing leaf bases* membranous, purplish-brown (fresh); *bracts* 3, about as wide as the leaves, with one upright and up to 9 cm long, flanked by two additional, divergent, subequal bracts to 5.5 cm long; *inflorescences* comprising a single greenish (fresh) to straw-colored, burrlike, globose to slightly elongate head up to 7 mm long × 7 mm wide; *spikelets* compressed, 2–3 mm long, single-flowered, with one empty scale (the fertile scale and empty scale meeting face-to-face, unequal, and often with divergent apices, giving the spikelet a horned appearance); *scales* ovate-lanceolate, as long as the spikelet, multinerved with a prominent midrib extending into a mucro, the midrib usually sca-

brous-ciliate near its middle; *stamens* 2; *styles* 2; *achene* lens-shaped.

SPECIMENS EXAMINED. **Barbados.** ST. JOSEPH: Pasture, growing on muddy substrate near Bloomsbury, 11 Sep 1996, *Rogers 96-52* (BAR). ST. THOMAS: Swampy ground, Bloomsbury, 15 Feb 1990, *Carrington & Taylor 1176* (BAR); Walkes Spring Gully, 21 Oct 1937, *McIntosh & Allan 448* (BAR).

Kyllinga nemoralis is similar but has white (vs. green) heads, scales with winged keels scabrous-ciliate along most of the length of the keel (vs. scabrous-ciliate at the center of the keel, if at all), and 3 (vs. 2) stamens. *Kyllinga brevifolia* is subtropical and tropical worldwide.

22. ***Kyllinga nemoralis*** (J. R. & G. Forst.) Dandy ex Hutch., Fl. W. Trop. Africa, ed. 1, 2, 2: 487. 1936. Figure 34.

Thryocephalon nemorale J. R. & G. Forst., Char. Gen., Pl. 130. 1776.

Grassy, weedy, strongly rhizomatous, glabrous sedge rising to about 40 cm tall; *culms* sharply 3-angular, to about 1.2 mm diam. at the apex; *basal sheathing leaf bases* purplish (fresh); *leaves* not entirely basal, the blades shorter than the culms, to 14 cm long \times 4 mm wide, V-shaped in transverse section; *bracts* 3 or 4, reflexed, unequal in length, similar to the leaves in width (or narrower) and overall appearance but shorter, to 11 cm long; *flowering head* single, sessile, white (fresh and nearly white when dried), globose or a little longer than broad, tightly congested, to ca. 6 (7) mm long; *spikelets* generally 1-flowered, the *scales* nearly equal and defining the length of the spikelets, to ca. 3 mm long, strongly flattened into an envelope with a winged keel, the wing with a scabrous-ciliate margin for most of its length; *stamens* 3; *styles* 2, about as long as the flattened, dark-colored achene.

SPECIMENS EXAMINED. **Barbados.** ST. JOSEPH: Weed on grounds of Andromeda Botanic Gardens, 8 Dec 1997, *Rogers 97-58* (BAR); same locality, 13 Oct 1989, *Carrington 1090* (BAR).

Kyllinga nemoralis may be confused with *K. brevifolia*. For a recent treatment of *K. nemoralis* in Trinidad see Adams (1992). In Barbados, *K. nemoralis* is known only as a lawn weed. The abundant weedy population in a minimally tended lawn area at Andromeda Botanic Gardens may owe its arrival to plants, seeds,

and soils imported during the post-1954 development of the facility. As reported by Dr. C. Dennis Adams (pers. comm.), the pantropical species will probably turn up increasingly in the West Indies. By 1992 he had recorded it from Jamaica, St. Kitts, Dominica, and Trinidad and Tobago.

Pycneus P. Beauv., Fl. d'Oware 2: 48, t. 86. 1807.

Spikelets flattened, with distichous scales; *flowers* without hypogynous bristles; *ovaries* 2-carpellate; *achenes* flattened and two-sided; *styles* 2. Not strongly distinguished from *Cyperus*. Approximately 70 species throughout much of the world, mostly in Africa.

23. ***Pycneus polystachyos*** (Rottb.) P. Beauv., Fl. d'Oware 2: 48. 1807. FLA 3: 261. Figure 35.

Cyperus polystachyos Rottb., Descr. Pl. Rar. 21. 1772. Gooding et al., Fl. Barbados 77.

Slender sedge to 40–70 cm tall; *culms* up to ca. 2 mm diam. near the apex; *leaves* up to 43 cm long \times 1–2 (4) mm wide; *bracts* 3–6 in number, very unequal, 14–40 (45) cm long, to 5 mm wide, the shorter ones stiff and perky, drooping when long, resembling the leaves though sometimes broader, often yellowish (fresh); *inflorescence* umbellate, up to 6 cm tall \times 10 cm wide; *rays* 5–8 in number, up to 6 cm long, free of spikelets toward the base; *raylets* very short and generally hidden by spikelets, sometimes with short 3rd- or 4th-order branches (excluding the rachillae); *spikelets* flattened with imbricate scales in a chevron pattern, up to 8–10 mm long \times 1–1.5 mm wide, straw-colored when dry, narrowly lanceolate; *scales* 6–18 per spikelet, 1.5–1.9 mm long, lanceolate, often (dry) with green; *stamens* 1 or 2.

SPECIMENS EXAMINED. Barbados. CHRIST CHURCH: Graeme Hall, Apr 1989, Carrington & Taylor 1114 (BAR). ST. JOHN: Low area in disturbed field, standing water, about 1 km N of B. E. C. satellite dish, 23 Oct 1996, Rogers 96-118 (BAR, MICH); same locality, 4 Nov 1996, McClain 96-20 (BAR). ST. JOSEPH: Maynard's, Aug 1936, Mayers 376 (BAR). ST. PHILIP: Marsh in stream near Palmer's, 4 Apr 1937, McIntosh 376a (BAR).

Pycneus polystachyos is a medium-sized sedge of wet, muddy, sunny places. Its distinctive features include a tendency toward yellow-green coloration (at least in Barbados), inflorescences with straw-colored lanceolate spikelets in loose short-branched clusters

borne by elongate rays, and two styles. Some contemporary authors place this species in *Cyperus*. *Pycreus polystachyos* occurs worldwide in warm-temperate, subtropical, and tropical regions, as far north as Japan. It is abundant in Graeme Hall Swamp.

Rhynchospora Vahl, Enum. Pl. 2: 229. 1805, *nom. cons.*

Dichromena Michx., Fl. Bor.-Amer. 1: 37. 1803.

Distal *flowers* in spikelet staminate; *bracts* (in ours) whitened adaxially at the base; *styles* 2 (1); *achenes* lens-shaped, topped with a persistent *style base*. Approximately 250 species, cosmopolitan.

24. ***Rhynchospora nervosa*** (Vahl) Boeck., Vidensk. Meddel. Dansk Naturhist. Foren. Kjøbenhavn III. 1: 143. 1869. FLA 3: 306. Gooding et al., Fl. Barbados 82. Figure 36.

Dichromena nervosa Vahl, Enum. Pl. 2: 241. 1805.

Tough glabrous to heavily white-ciliate sedges of highly variable stature and form, to 30 (50) cm tall; *culms* 3-angled, 1–1.5 mm diam. near the apex; *leaves* (rarely) up to 35 cm long \times 5 mm wide, shorter than or longer than the culm, featuring a strongly developed midrib; *bracts* generally ca. 6 in number, 8–14 cm long, up to 3 (4) mm wide, tapered, with bright white (fresh and dry) basal-adaxial markings; *inflorescences* headlike, globose or nearly so, up to 1.5 cm tall \times 2 cm broad (excluding the bracts) with numerous, crowded, sessile whitened *spikelets* 5–8 mm long \times 2–3 mm wide; *scales* 4.5–5 mm long, lanceolate, with a narrow keel corresponding to the midrib; *stamens* 3; *styles* 2; *achenes* lens-shaped with pronounced horizontal striations and topped with a broadly triangular style base.

SPECIMENS EXAMINED. Barbados. ST. ANDREW: Turner's Hall, open pasture near woods, Sep 1940, Gooding 433 (BAR); pasture off of highway (H2) between Baxters and Springvale, 11 Sep 1996, Rogers 96-45 (BAR, MICH). ST. JOSEPH: Near Bloomsbury, site saturated with water, swampy, muddy, in cow pasture, 4 Nov 1996, McClain 96-12 (BAR). ST. THOMAS: Harrison Cave, pasture, 6 Jun 1990, Carrington & Taylor 1231 (BAR); Highland Gully, Jul 1937, McIntosh 433 (BAR).

This abundant short-statured species inhabits pastures and similar moist, sunny places as well as the floors of some gullies. It is unique in having bright white "pseudopetals" or bracts with white markings. The species ranges widely in the New World

tropics. Koyama (1979) recognized *Rhynchospora nervosa* subsp. *ciliata* (Vahl) T. Koyama, with short stolon-free rhizomes, leaves 2-4 mm wide (vs. 1-2 mm in subsp. *nervosa*) and sometimes longer than the culm (vs. as long as the culm or shorter). Barbados material conforms with subsp. *ciliata*.

Scleria Bergius, Kongl. Vetensk. Akad. Nya Handl. 26: 142, pl. 4,5. 1765.

Leaves borne on the culm; *flowers* unisexual, and *spikelets* usually monoecious; *carpellate flower* with the ovary usually above a "hypogynium"; *styles* 3; *achene* bony and remaining atop the hypogynium at dehiscence (hypogynium absent in *Scleria lithosperma*). About 200 species, mostly tropical.

25. ***Scleria lithosperma*** (L.) Sw., Prodr. 18. 1788. FLA 3: 315. Gooding et al., Fl. Barbados 82. Figure 37.

Delicate grasslike sedge with cauline leaves; *culm* 3-angled, to 40 (60) cm tall, slender, to 2 mm wide at the base, under 1 mm diam. apically; *leaves* linear, flexuous, up to 22 cm long \times 2.5 mm wide, scabrous-margined; *inflorescences* terminal and axillary, to 5 cm long \times 1 cm wide, spicate or scarcely paniculate, subtended by cauline leaves and having linear bracts resembling foliage leaves at the first-order inflorescence; *scales* ca. 5 mm long, narrowly lanceolate with hyaline margins and a thick midrib, this protruding apically as a short awn; *stamen* 1; *achenes* white.

SPECIMENS EXAMINED. **Barbados.** ST. JAMES: Gully side in shade, Plum Tree Gully, 2 Dec 1989, *Carrington 1111* (BAR); talus slope of gully, Plum Tree Gully, 11 Apr 1989, *Carrington & Taylor 978* (BAR). ST. JOSEPH: Foster Hall Woods, floor of semi-dry woodland, Sep 1940, *Gooding 378b* (BAR); rocky talus in rather dry forest, Foster Hall Wood, Jul 1940, *Gooding* [number illegible] (BAR). ST. PETER: Cherry Tree Hill, shaded forest floor near St. Nicholas Abbey, 17 Dec 1997, *Rogers 97-66* (BAR). ST. PHILIP: Top of ledge (S side) of gully in Three Houses Park, rocky, shaded, abundant, 9 Oct 1997, *Rogers 97-44* (BAR).

Scleria lithosperma is a small, delicate sedge of shaded, dry, rocky sites, such as the sides of gullies. It is compared with the far more common and much larger *S. melaleuca* under that species. *Scleria lithosperma* occurs worldwide in the tropics.

26. ***Scleria melaleuca*** Reichenb. ex Schlecht. & Chamisso, Lin-

naea 6: 29. 1831. Gooding et al., Fl. Barbados 83.
Figure 38.

Scleria pterota Presl in Oken Isis 21: 268. 1826, *nomen nudum*. FLA
3: 310.

Robust rhizomatous sedge with leafy *culms* to ca. 50 (80) cm tall and 5 mm diam., the angled corners scabrous; *leaves* to 53 cm long \times 15 mm wide with scabrous margins, plicate with 2 prominent nerves flanking the midvein, the apices long-acuminate; *inflorescences* terminal and lateral, up to 11 cm long \times 4 cm wide, paniculate (orders of branching up to 3 [4], including the pedicels), subtended by cauline leaves, and with small linear-lanceolate bracts subtending the major axes; *flowers* in intermixed staminate and pistillate spikelets, the pistillate spikelets on the older, more central axes in quasi-dichasial clusters and the staminate spikelets tending to be more numerous and lateral; *staminate spikelets* resembling tiny ears of corn with many ligulate to lanceolate bracteoles tightly clustered around an apically protruding tuft of stamens, the basal scales sterile, the distal scales each subtending a single stamen; *pistillate spikelets* of similar shape and size, having fewer scales, the basal scales becoming large and protective in fruit; pistillate flower solitary, with its 3 *styles* protruding from the bract cluster; *achenes* globose, white, clasped basally by short, thickened lobes of the *hypogynium*.

SPECIMENS EXAMINED. **Barbados.** ST. ANDREW: Chalky Mt., 8 Aug 1904, *Murphy 459* (BAR); Turner's Hall Wood, 4 Oct 1937, *McIntosh & Allan 378ab* (BAR) [The collection *Gooding 378b* is *S. lithosperma*]. ST. JOSEPH: Pasture, Maynards, Jan 1936, *Mayers 378* (BAR); hilltop meadow near Sturges, Highway 3A, 6 Sep 1996, *Rogers 96-41* (BAR, MICH). ST. THOMAS: Coles Cave Gully, damp spot on gully floor, Jan 1940, *Gooding 378* (BAR). Parish unclear: Rocky pasture above Mt. Wilton Gully, 4 May 1937, *McIntosh 378a* (BAR).

Scleria melaleuca is common and widespread, and tends to be weedy. Habitats are variable: pastures, gully floors, marshy places, and scrubby waste areas. It and *S. lithosperma* are the only two Barbados sedges with cauline leaves and monoecious flowers; *Cyperus compressus* has low cauline leaves but perfect flowers. The uncommon *S. lithosperma* differs by having much narrower leaves (up to 2.5 mm as opposed to generally well over 5 mm wide). *Scleria melaleuca* occurs in the West Indies and South America.

Torulinium Desvaux in Hamilton, Prodr. 15. 1825.

Spikelets with distichous *scales*; *rachillae* breaking apart into units corresponding to single achenes, rachillae axes becoming corky-winged, the wings clasping the achene. Approximately 10 species, mostly in the Neotropics. The continued recognition of *Torulinium* by botanists who study Cyperaceae is in doubt, as the genus is not strongly differentiated from *Cyperus*. Authors merging the two include Correll and Correll (1982), Proctor (1984), and McVaugh (1993).

27. ***Torulinium filiforme*** (Sw.) C. B. Clarke in Urban, Symb. Antill 2 (1): 57. 1900. FLA 3: 288. Figure 39.

Cyperus filiformis Sw., Prodr. 20. 1788.

Thin, delicate sedge 18 cm tall; *culm* 1 mm diam.; *leaves* grass-like, some as tall as the culm, 1 mm wide; *inflorescence* pseudolateral, overtopped by a bract extending the line of the culm; additional bracts smaller; *spikelets* 2–5 in fingerlike clusters, up to 8–15 mm long; *scales* 3–7 per spikelet, spirally arranged and acute, ending in a point, tending to remain broad in upper half toward the apex.

This modest, inconspicuous sedge is known in Barbados from only one collection [ST. MICHAEL: Bridgetown, weed of lawn, Barbados Museum, 12 Apr 1989, *Carrington 1116* (BAR)] and had not been reported for Barbados previously. Searching the site and environs on multiple occasions failed to turn it up in 1997. It is distinctive by its extremely thin, grasslike nature. *Kyllinga brevifolia* is similar in this regard but has slightly broader leaves and consistently three bracts subtending its burrlike inflorescence (vs. up to 5 spikelets in a digitate cluster). *Torulinium filiforme* occurs in southern Florida and the West Indies.

28. ***Torulinium odoratum*** (L.) Hooper, Kew Bull. 26: 579. 1972. FLA 3: 287. Figure 40.

Cyperus odoratus L., Sp. Pl. 46. 1753. Gooding et al., Fl. Barbados, 77.

Large, robust sedge, the base slightly swollen with sometimes conspicuous adventitious roots; *culm* 30–80 cm tall, 3 mm diam. near the apex, triangular, smooth, topped with ca. 6–9 substantial leafy *bracts* up to 30 cm long × 12 mm wide; *leaves* often longer

than the culm, up to 70 cm long \times 12 mm wide, the sheaths purplish-brown; *inflorescence* ample, compound, 5–20 cm wide (excluding the bracts) and 20 cm tall; *rays* 5–7 in number, stiffly upright, up to 15 (20) cm long; *raylets* to 5 cm long; *spikelets* uncrowded and inserted at 90 degrees to the axis of the ray or raylet, (10) 15–25 mm long, yellow-green or yellow-brown at maturity; *scales* 8–16 in number, 2–3.5 mm long, translucent along borders, keeled; *stamens* 3; *styles* 3; *achene* ovate.

SPECIMENS EXAMINED. **Barbados.** ST. ANDREW: Turner's Hall Woods, in sun along dirt road leading into woods, 17 Dec 1996, *Rogers 96-158* (BAR). ST. JOSEPH: On muddy substrate within cow pasture in area of Bloomsbury, 4 Nov 1996, *McClain 96-14* (BAR); same locality, 20 Sep 1996, *Rogers 96-69* (BAR, MICH). ST. PHILIP: Three Houses, side of stream, May 1940, *Gooding 573* (BAR). ST. THOMAS: Bloomsbury, swampy ground, 15 Feb 1990, *Carrington & Taylor 1175* (BAR).

A large sedge encountered frequently in sunny wet sites. *Torulinium odoratum* is recognized by its long, narrow, light yellowish-brown spikelets inserted in uncrowded fashion at right angles to the axis that bears them. The living plants have a slight yellowish or brownish coloration. The species is pantropical.

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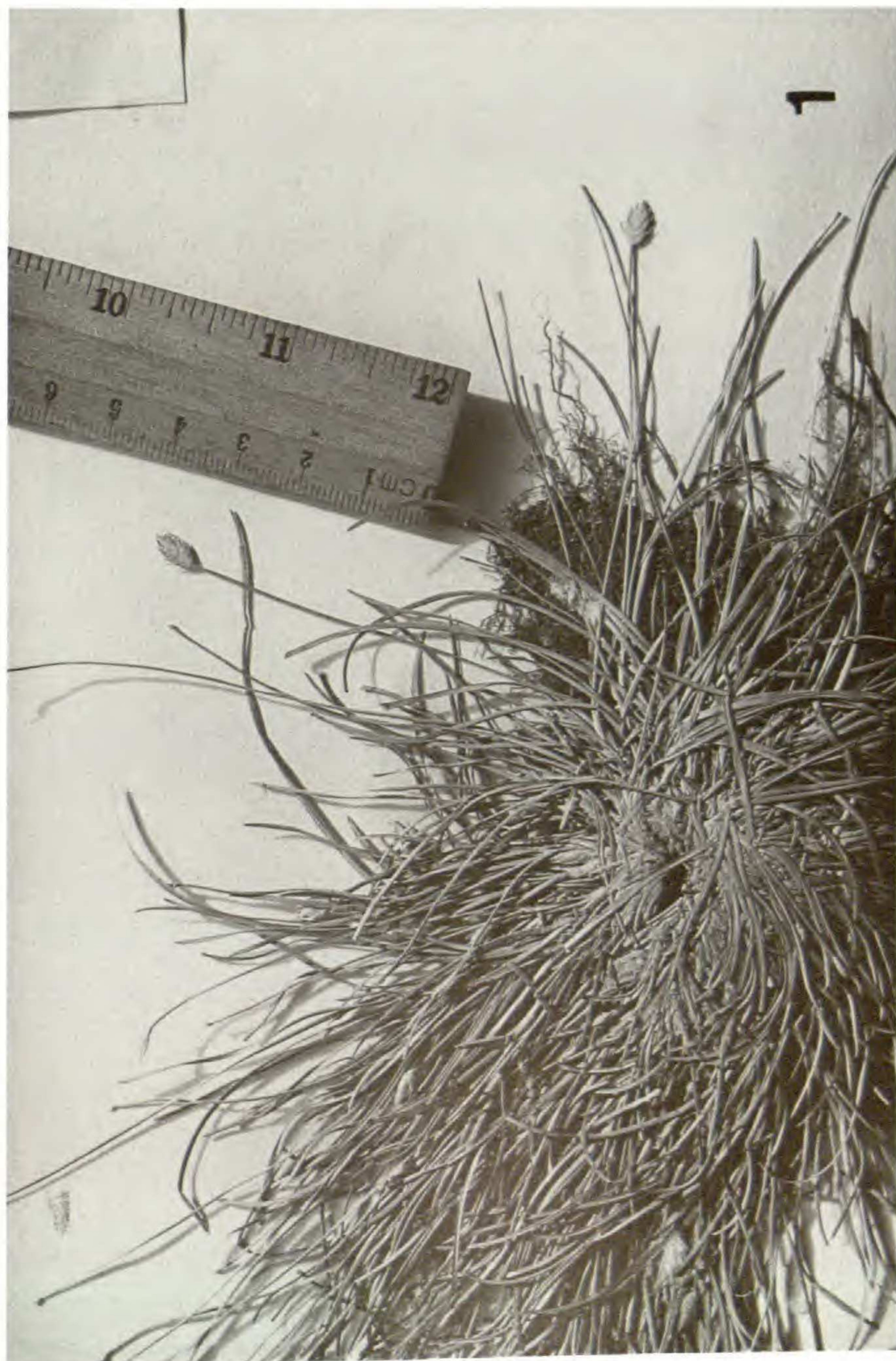


Figure 1. *Abildgaardia ovata* (Carrington & Taylor 1209).



Figures 2, 3. *Cyperus alopecuroides* (Rogers 97-8).

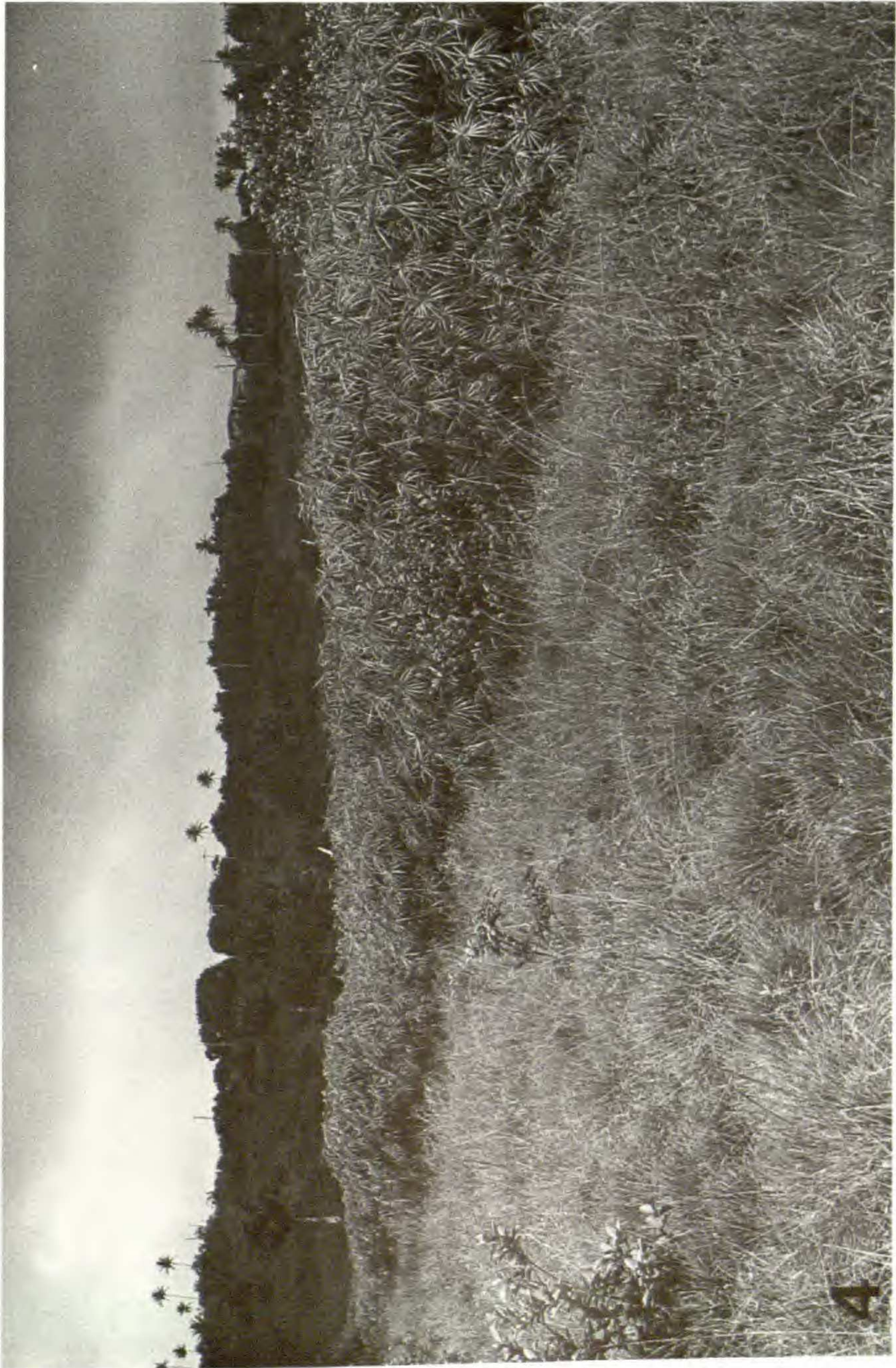


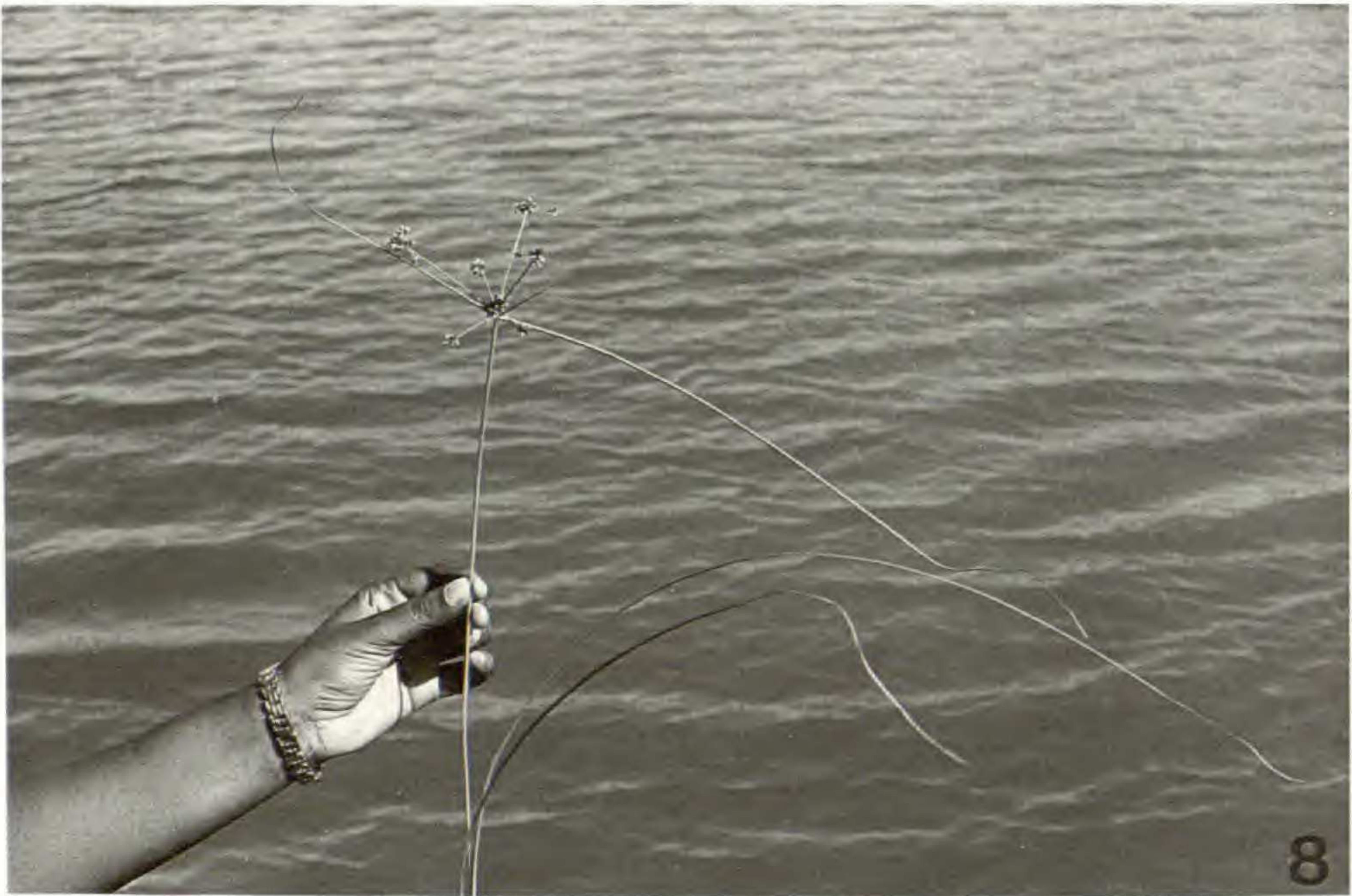
Figure 4. *Cyperus alternifolius* (McClain 96-15).



Figure 5. *Cyperus alternifolius* (Rogers 97-14).



Figures 6, 7. *Cyperus compressus* (Rogers 97-21).



Figures 8, 9. *Cyperus elegans* (Rogers 97-9).

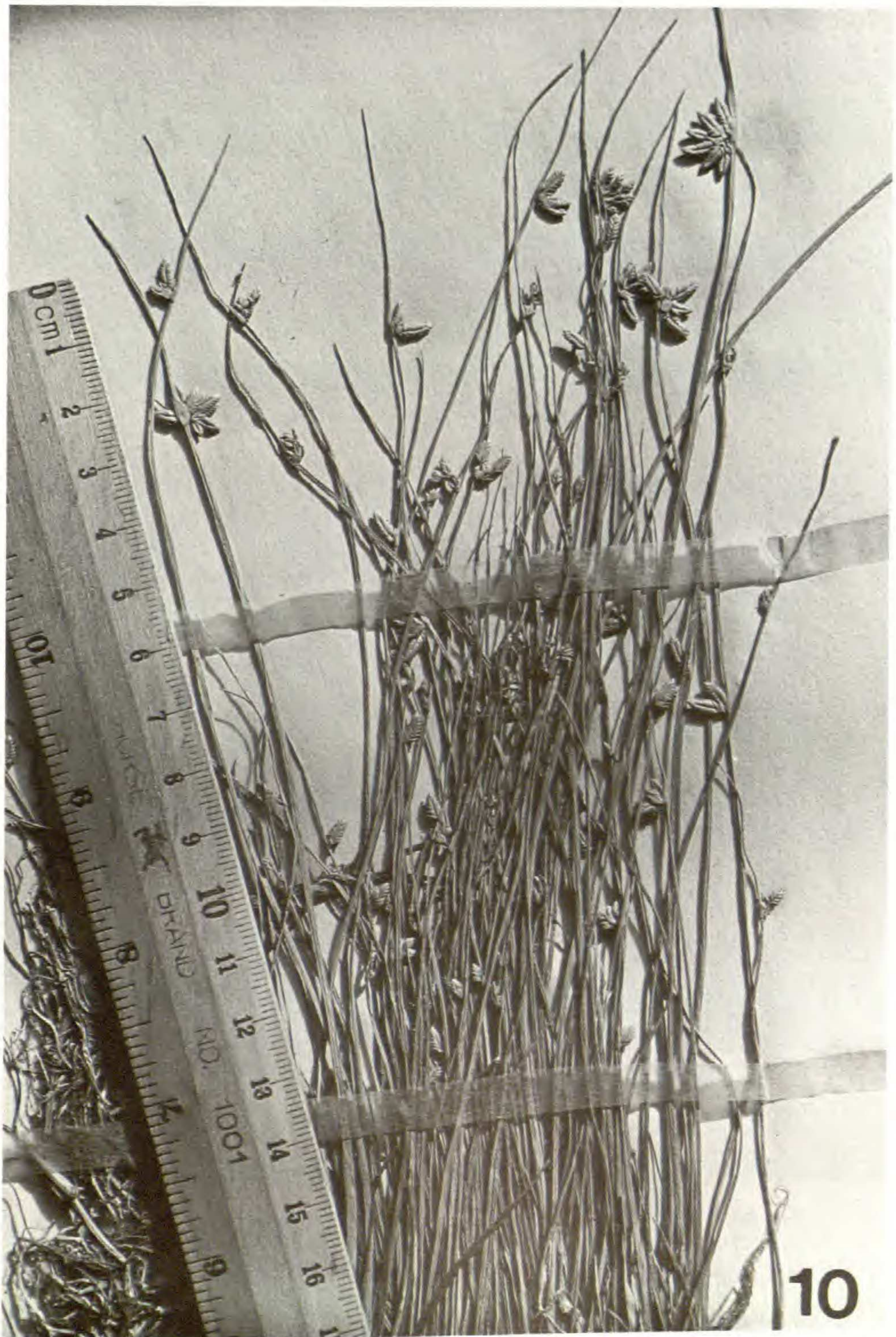


Figure 10. *Cyperus laevigatus* (McIntosh 435-305a).



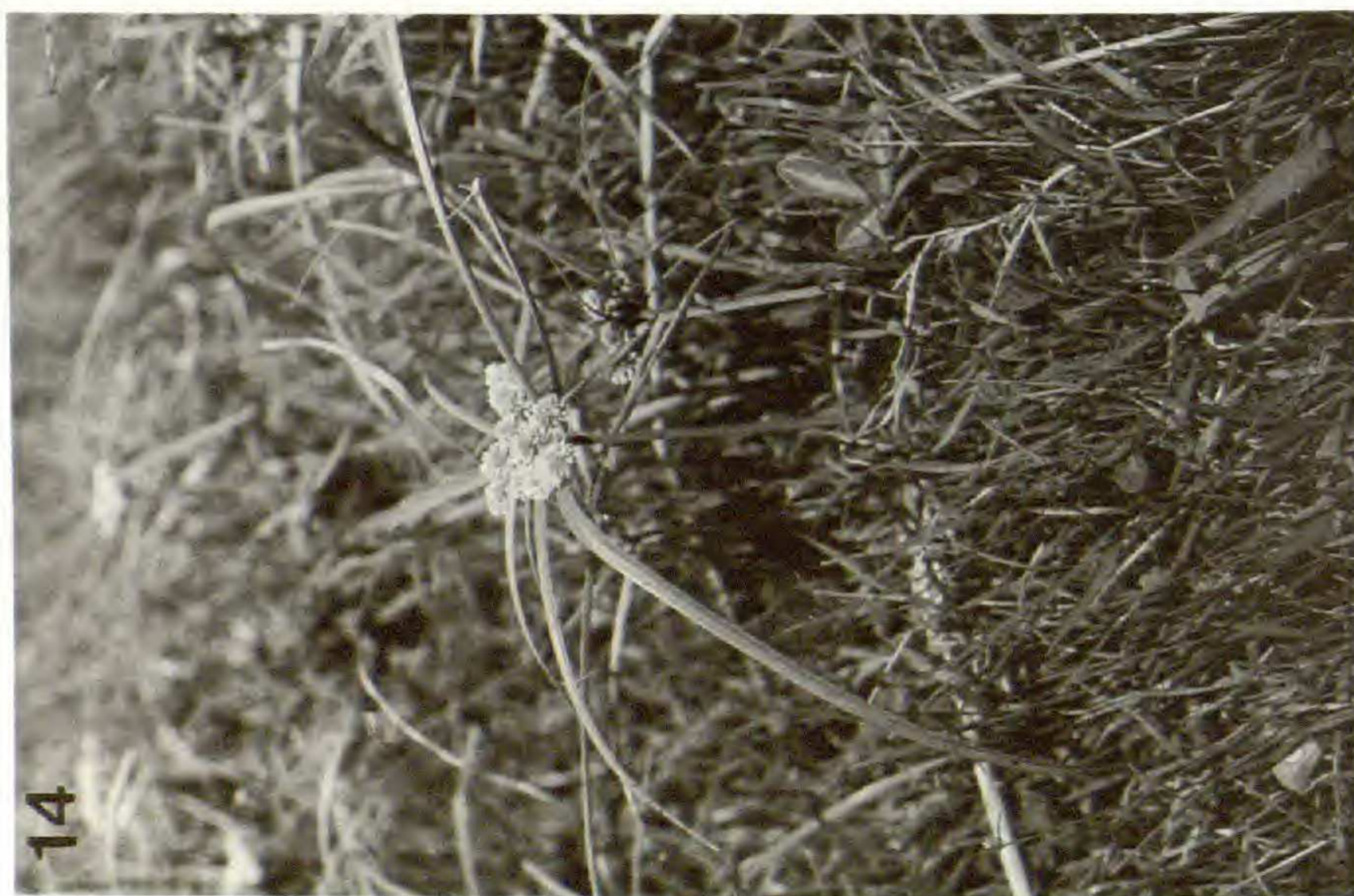
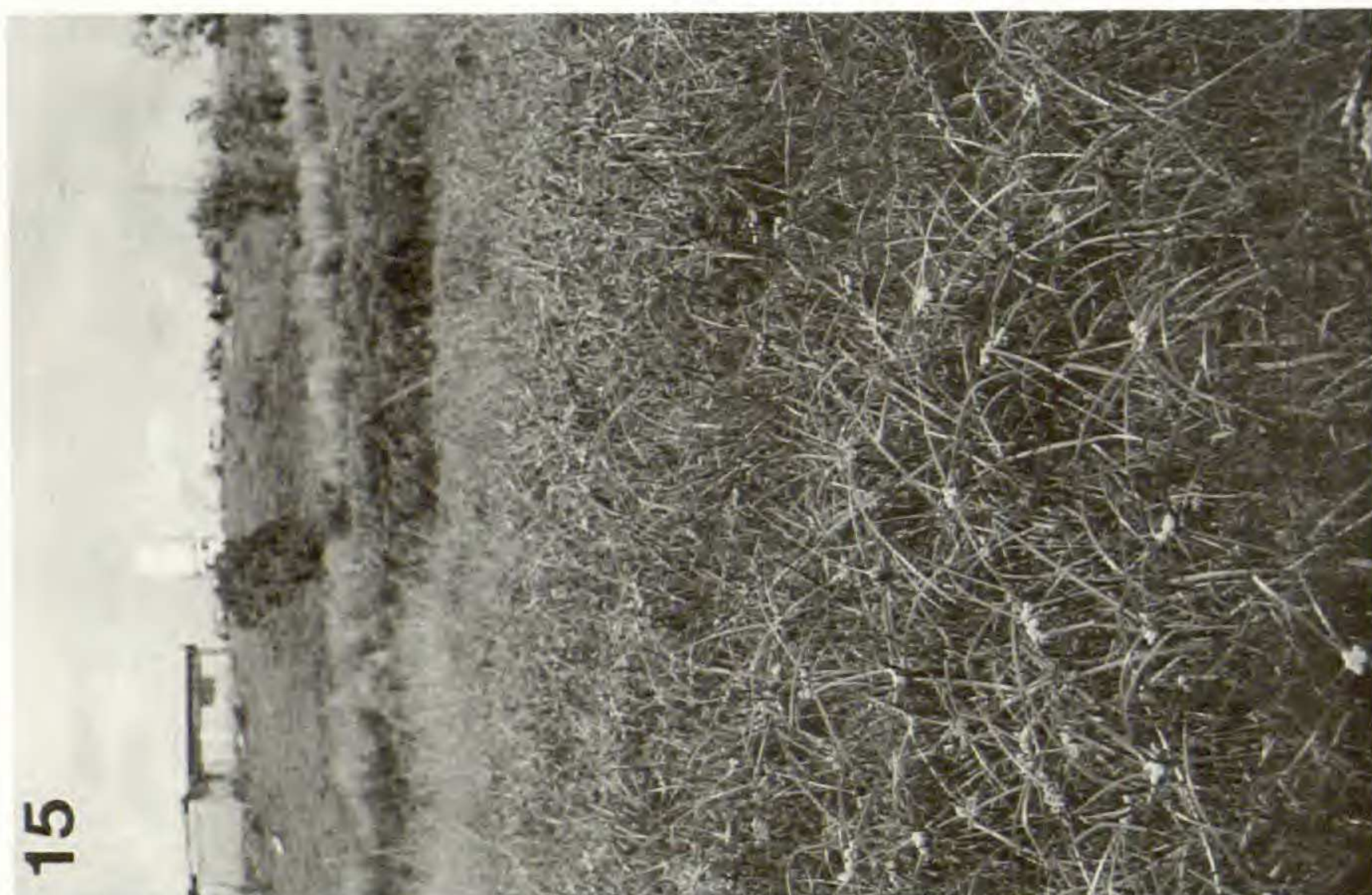
Figures 11, 12. *Cyperus ligularis* (Rogers 96-72, Forde 96-23).



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Figure 12. Continued. Figure 13. Rocky bluff at East Point, Barbados, with *Cyperus ligularis*.



Figures 14, 15. *Cyperus luzulae* (Rogers 96-50).



Figure 16. *Cyperus ochraceus* (Rogers 98-18).



Figures 17, 18. *Cyperus planifolius* (Rogers 96-73).



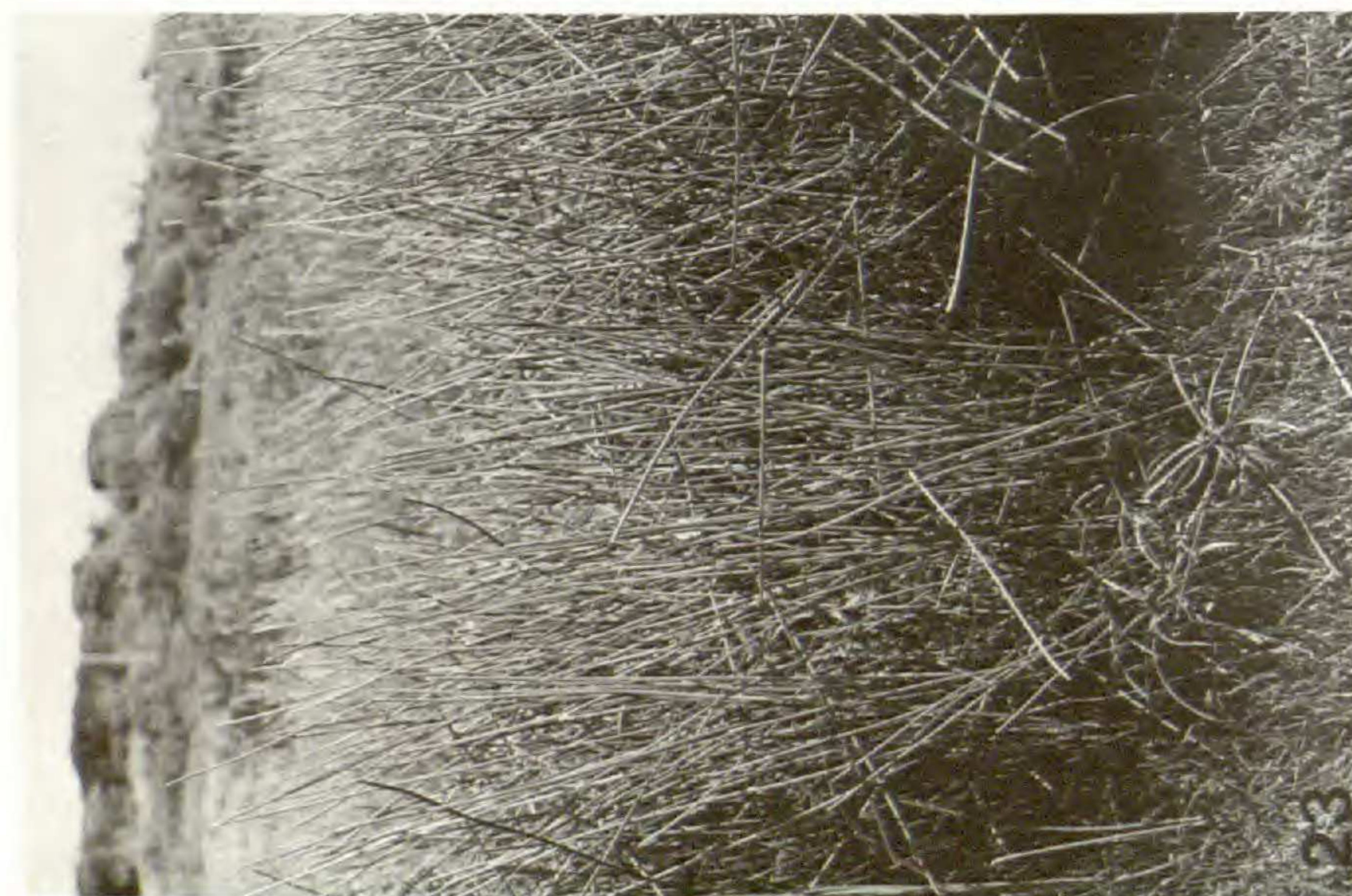
Figures 19, 20. *Cyperus rotundus* (Rogers 96-132).



Figure 21. *Cyperus sphacelatus* (Gooding 649).



Figure 22. *Eleocharis geniculata* (Rogers 97-23).



Figures 23, 24. *Eleocharis interstincta* (Rogers 96-49).



Figure 25. *Eleocharis macrostachya* (Dept. Of Agriculture No. 545).



Figures 26, 27. *Eleocharis mutata* (Rogers 97-11).



Figure 28. *Fimbristylis complanata* (McClain 96-8).



Figure 29. *Fimbristylis cymosa* (Rogers 96-65).

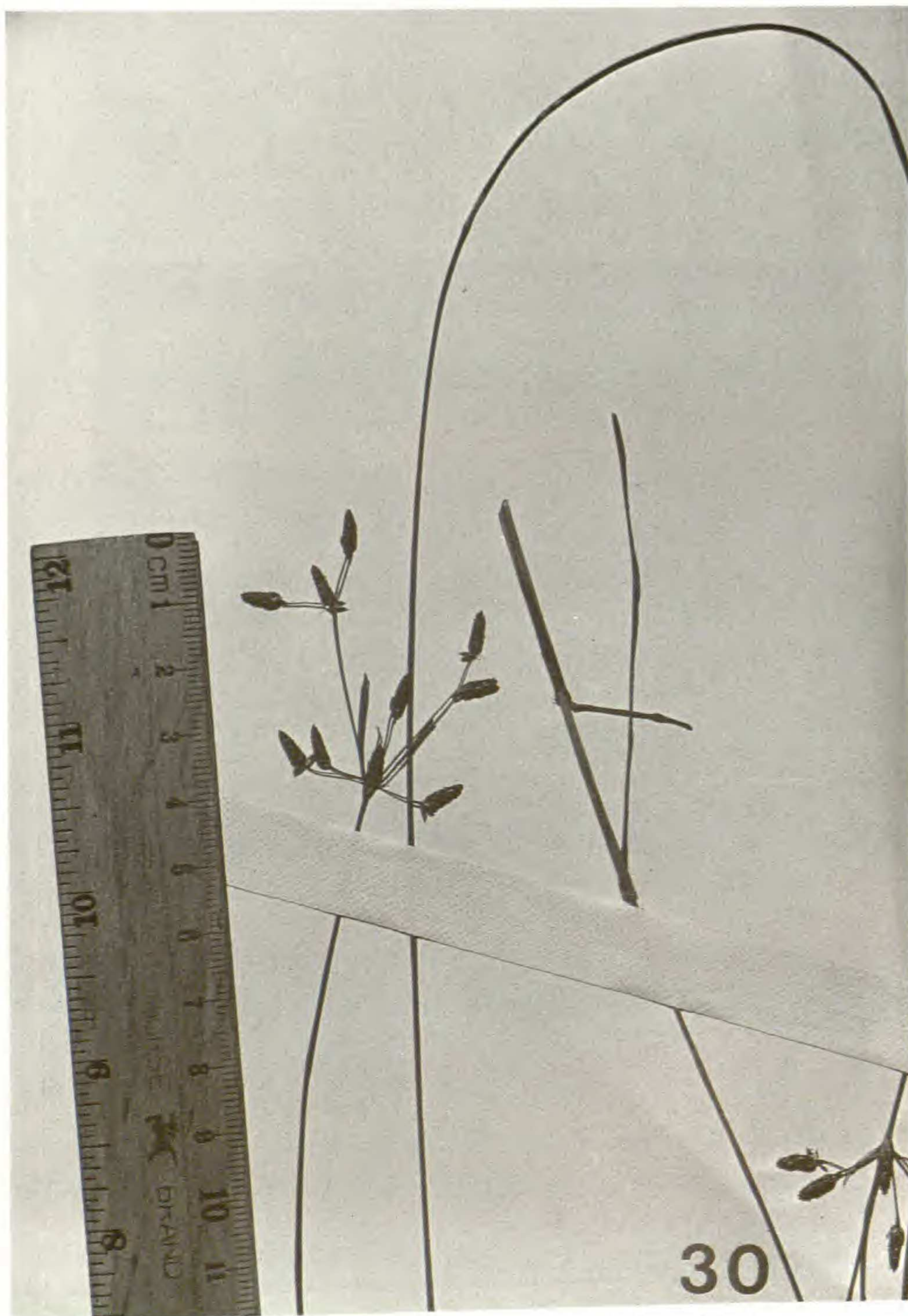
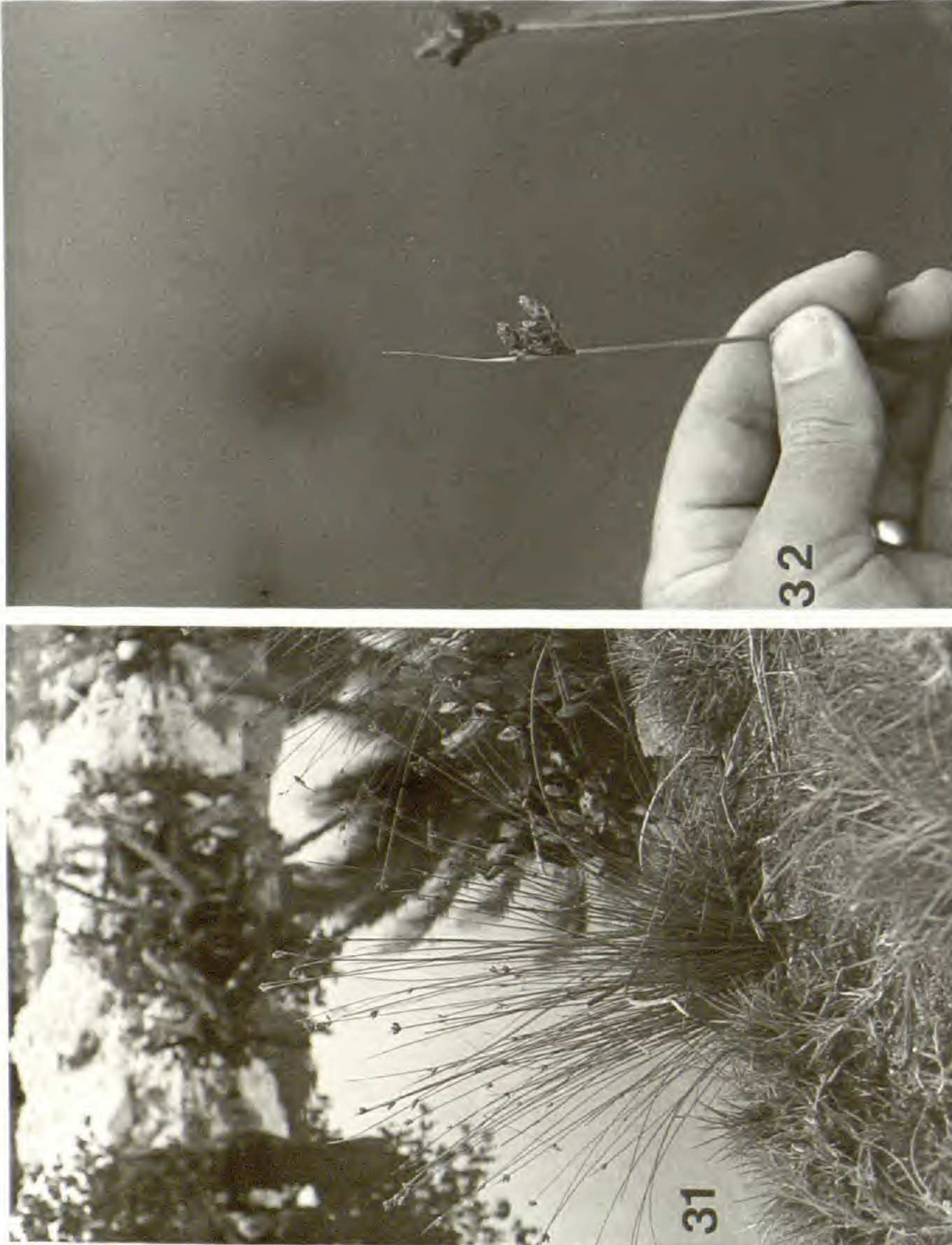


Figure 30. *Fimbristylis dichotoma* (McClain 96-10).



Figures 31, 32. *Fimbristylis ferruginea* (Rogers 96-129).

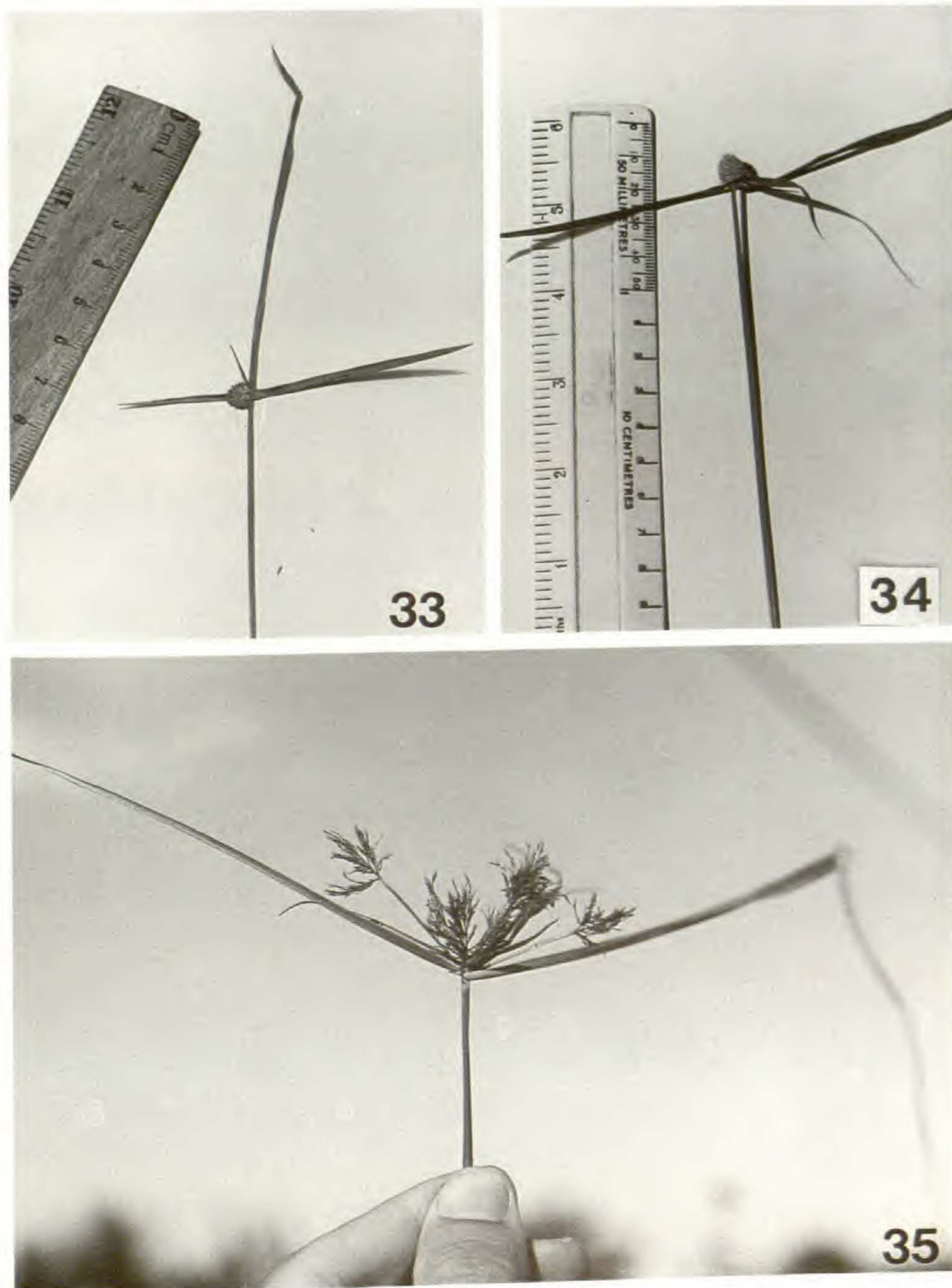


Figure 33. *Kyllinga brevifolia* (Carrington & Taylor 1176). Figure 34. *Kyllinga nemoralis* (Rogers 97-58). Figure 35. *Pycreus polystachyos* (Rogers 96-118).



Figure 36. *Rhynchospora nervosa* (McClain 96-12).

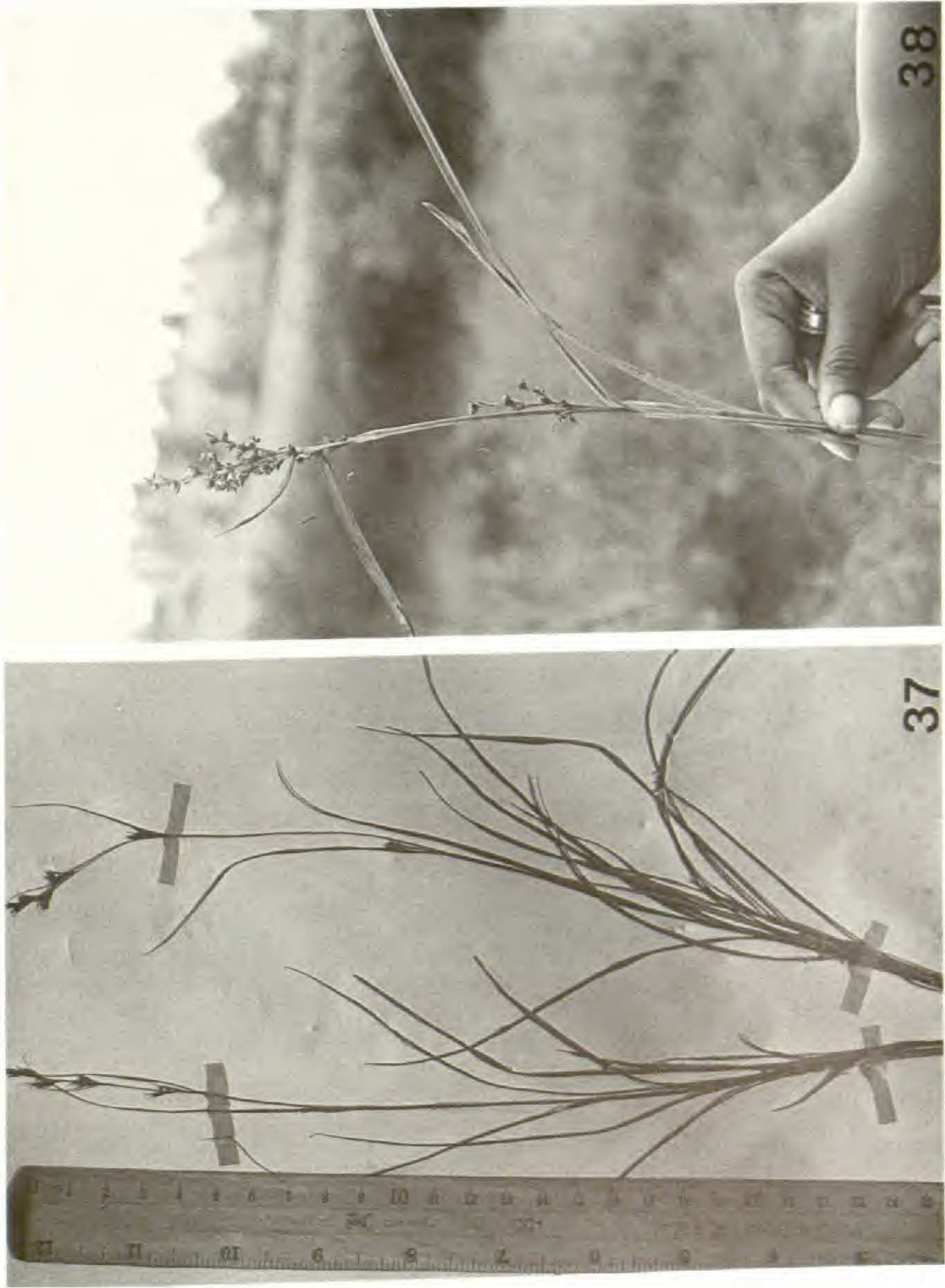


Figure 37. *Scleria lithosperma* (Gooding s.n. Jul 1940). Figure 38. *Scleria melaleuca* (McClain 96-9).



Figure 39. *Torulinium filiforme* (Carrington 1116).



Figure 40. *Torulinium odoratum* (McClain 96-14).